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DISEASES CAUSED BY BACTERIA AND FUNGI

PAULUZZI, L. (1954). La dermatite pustolosa mammaria delle bovine — nota preventiva. **[Pustular dermatitis of the skin of the mammary gland in cattle. Preliminary note.]**—*Atti Soc. ital Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 993-996. [English and French summary.] **3403**

P. described a skin disease of milch cows characterized by the formation of pustules at the base of the teats, from which *Staphylococcus aureus* was isolated. A similar condition was seen on the hands of persons milking affected cows.—R.M.

ALDER, V. G., GILLESPIE, W. A. & HERDAN, G. (1953). **Production of opacity in egg-yolk broth by staphylococci from various sources.**—*J. Path. Bact.* **66,** 205-210. [Abst. from authors' summary.] **3404**

Groups of staphylococci from human and animal sources were tested for their ability to produce opacity in egg-yolk broth. The coagulase-negative staphylococci of human origin all failed to produce this reaction. Most of the coagulase-positive staphylococci of human origin gave positive reactions, especially those from cutaneous and subcutaneous abscesses; fewer of those from nasal swabs gave positive reactions.

Coagulase-positive staphylococci from cattle and some other animals differed greatly from human strains. Most of the animal strains gave negative reactions.

MACLEOD, P., PLASTRIDGE, W. N., ANDERSON, E. O., GULLET, V. N. & HALE, H. H. (1953). **Leucocyte count of herd milk compared to the incidence of mastitis.**—*J. Dairy Sci.* **36,** 1267 - 1271. [Abst. from authors' summary.] **3405**

Variations in the average leucocyte counts of herd milk depended on the percentage of cows affected with mastitis within the herd. If more than 40% of the cows were infected, the average leucocyte count was one million or more per ml. *Str. agalactiae* infection was associated with slightly higher leucocyte counts than mastitis caused by other organisms.—R.M.

NEAVE, F. K., HIGGS, T. M., SIMPKIN, D., OLIVER, J. & DODD, F. H. (1954). **The relationship between mastitis and the method of stripping after machine milking.**—*J. Dairy Res.* **21,** 10-18. **3406**

In an investigation over a period of a year in two herds, each divided into 2 groups, the one machine stripped and the other hand stripped, and with 2 cows in each group always left infected with *Str. agalactiae* and milked first, there was a greater incidence of sores on the body of the teats in the hand-stripped group, but no significant difference was found in the number of new intramammary infections between the 2 groups of cows.—A. ACKROYD.

SMITH, I. M. & PATTISON, I. H. (1954). **The effect of oxytocic principle on an experimental *Str. agalactiae* mastitis in goats.**—*Vet. Rec.* **66,** 372-374. [Authors' summary copied *verbatim.*] **3407**

Under experimental conditions the use of oxytocin, either alone or in conjunction with penicillin, had no effect on the course of an experimental mastitis produced in goats by *Str. agalactiae.*

ORMSBEE, R. & SCHALM, O. W. (1949). **Epizoötiology of mastitis : the relative importance of extended exposure and of age in the spread of *Streptococcus agalactiae* infection.**—*Amer. J. vet. Res.* **10,** 306-313. **3408**

To test the theory put forward by Murphy [*V.B.* **24,** 2600] that the " age factor " is the main predisposing cause of streptococcal mastitis, the authors examined data from two outbreaks in a herd previously free from *Str. agalactiae* infection. The incidence following uniform exposure in a group of 205 animals in

second and higher lactations which had previously been infected and cured, and in a group of 236 animals over the same range of lactation which had never previously been infected was found to be 21·95% and 19·92% respectively. The average respective ages in lactation of these two groups were 5·01 and 3·53 and according to the prediction equations published by Murphy there should have been a difference in susceptibility of 26 to 31%. The authors concluded that neither age *per se*, an age factor, nor a permanent change within the mammary gland play any important role in the susceptibility to *Str. agalactiae* mastitis.—J. SCARNELL.

POZZI, L. (1954). Cura delle mastiti nelle bovine con pomata al cloroamfenicolo. **[Treatment of bovine mastitis with chloramphenicol cream.]**—*Gazz. Vet., Milan.* No. 1. pp. 1-5. **3409**

Chloramphenicol cream introduced through the teat canal gave good results in the treatment of 12 cases of streptococcal mastitis. There was no irritant action and very little reduction in milk supply.—I. W. JENNINGS.

TILGNER, K. & SCHIERHOLZ, H. (1954). Beobachtungen über die Veränderung der euterpathogenen Streptokokkenflora durch Therapie mit antibiotischen Mitteln. **[Morphological changes in streptococci of the udder after treatment of mastitis with antibiotics.]**—*Berl. Münch. tierärztl. Wschr.* **67,** 90-93. [English summary.] **3410**

Following treatment with penicillin preparations of 150 cases of streptococcal mastitis in 5 severely infected herds, there were fewer cases of *Str. agalactiae* infection compared with infections caused by other streptococci, and there was a predominance of atypical variants of *Str. agalactiae* over typical strains. The number of cases of subclinical mastitis increased.
—W. G. SILLER.

VAN DORSSEN, C. A. (1954). **Streptococcal metritis in the mink.**—*J. comp. Path.* **64,** 94-96. **3411**

A note on the isolation in pure culture of an α-haemolytic streptococcus from 3 mink which died from metritis, and of inoculation tests using very small numbers of mice, g. pigs and ferrets. Two pregnant g. pigs aborted and died and a pregnant ferret died but did not abort though the organism was isolated from the foetuses and placentas.—F.E.W.

SIPPEL, W. L., MEDINA, G. & ATWOOD, M. B. (1954). **Outbreaks of disease in animals associated with *Chromobacterium violaceum*. I. The disease in swine.**—*J. Amer. vet. med. Ass.* **124,** 467-471. [Abst. from authors' summary.] **3412**

An account of an outbreak of *Chromobacterium violaceum* var. *manilae* infection in pigs. The lungs of affected animals bore numerous abscesses, and there were occasionally white nodules in the liver and a few abscesses in the spleen. The kidneys were congested.

Chronic cases resembling those occurring naturally, as well as an acute form of the disease, were produced experimentally by oral administration, and one acute case by intranasal instillation, of cultures of the organism recovered from naturally infected pigs.

MEYN, A. (1953). Die Fortschritte der Rindertuberkulose - Bekämpfung in der Bundesrepublik (Stand am 1.7.1953). **[Progress in the control of bovine TB. in West Germany.]**—*Rindertuberkulose.* **2,** 162-168. **3413**

A review of progress in the control of TB. in cattle in West Germany showing the results obtained from the 1st July 1952 to the 1st July 1953, with 9 figures.

On the 1st July 1953 there were 449,832 herds (30·14% of the total number of herds) comprising 3,690,804 cattle (31·70% of the cattle population) included in the control scheme, of which 229,828 herds comprising 1,696,306 cattle were officially attested as TB.-free. Since the 1st July 1952 the number of herds included in the scheme had increased by 139,988 with 1,336,686 additional cattle; of these, 80,321 herds comprising 637,627 cattle were attested.—R. B. HOLCOMBE.

THOMSON, W. M. (1954). **Cases of tuberculosis with no visible lesions.**—*J. Amer. vet. med. Ass.* **124,** 307-309. [Author's summary slightly modified.] **3414**

As long as the number of reactors found on each succeeding bovine tuberculin test of the same area diminishes, the percentage of these reactors which show no visible lesions will probably increase, but this will not indicate an increase in the number of cases with no visible lesions.

There is no evidence that cases with no visible lesions are on the increase over the entire U.S.A.; on the contrary, there has been a decrease both in cases with lesions and those with no visible lesions.

BORODENOK, A. I. (1952). **[The filtrable form of *Mycobacterium tuberculosis.*]**—*Veterinariya, Moscow.* **29,** No. 8. pp. 33-39. [In Russian.] **3415**

Sheep experimentally infected with *M.*

tuberculosis [type not specified] became reactors to the subcutaneous tuberculin test but not to the intradermal test. Typical lesions of TB. were demonstrable at P.M. examination, but the organism could not be isolated in culture. Two lambs each given daily *per os* 10 ml. of a 1:25 suspension of material from these lesions, and two others given similar material from a naturally infected sheep, for 4 days, became reactors to the s/c tuberculin test. Lesions of TB. were demonstrable in the alimentary canal and in some lymph nodes when the lambs were slaughtered 56 and 63 days after dosage, but attempts to isolate the organism from the lesions failed, as did attempts to cultivate it from material from two other lambs which were similarly dosed with material from these four. B. suggested that failure to isolate the organism in culture can be explained by mutation of the organism into a filtrable form as described by Ninni (1931).—F. A. Abbey.

Nègre, L. & Bretey, J. (1954). Sur le rôle des bacilles tuberculeux incomplètement évolués dans la bacillémie de la tuberculose expérimentale des animaux de laboratoire. **[Role of immature tubercle bacilli in the bacteraemia of experimental TB. of laboratory animals.]**—*C. R. Acad. Sci., Paris.* **238,** 171-172. **3416**

The authors postulated that only immature tubercle bacilli are present in the blood stream in the early stages of infection and that they are not pathogenic. The occurrence of such non-pathogenic forms would explain why virulent tubercle bacilli are rarely found in the blood, although lesions caused by vascular dissemination are present, and would also explain the occurrence of tuberculin allergy without lesions in laboratory animals inoculated with blood which contained immature tubercle bacilli.

—R.M.

Manocchio, I. (1954). Ulteriori ricerche sul comportamento dell'istamina ematica in polli sani e in polli colpiti da TBC spontanea. **[Further research on the histamine content of the blood in healthy and tuberculous fowls.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 584-588. [English and French summaries.] **3417**

Previously [*V.B.* **24,** 2205] M. had demonstrated that the histamine content of the blood of tuberculous fowls was lower than that of healthy fowls. His present work confirmed this, and in addition he found that the ratio of histamine content of the plasma to the histamine content of the r.b.c. was 1:40–1:50 in 3 healthy fowls and 1:9–1:24 in 5 tuberculous fowls.

—R.M.

Meyer, J., Sartory, R. & Touillier, J. (1952). La contamination de l'espèce humaine par le bacille de Koch (type bovin) en Suisse. **[Infection of human beings in Switzerland by bovine type tubercle bacilli.]**—*Pr. méd.* **60,** 155-156. **3418**

The authors presented the results of a statistical survey of mortality in human beings from TB. caused by the bovine type of tubercle bacilli in 5 cantons of Switzerland. Half the cases of intestinal and peritoneal TB. in human beings are due to the bovine type tubercle bacillus and this figure comprises about one third of the infections caused by the bovine type of the bacillus in man; a further third of such infections being pulmonary and the remaining third other forms of TB. TB. of the cervical lymph nodes is generally included statistically in official returns among other forms of TB. From 1891 to 1949 the incidence of abdominal TB. in human beings has decreased from 3·9 to 2·2% in relation to the total number of cases of TB. (4·2 to 3·5 cases per 10,000 inhabitants). Certain cantons are still heavily infected while others are free.—W. R. Bett.

Marks, J. (1954). **The *Mycobacterium tuberculosis* growth factor.**—*J. Path. Bact.* **67,** 254-256. [Author's summary modified.] **3419**

On certain media, mammalian type tubercle bacilli exhibit dependence on a lipoid which appears to be related to or identical with mycobactin, the *M. johnei* growth factor described by Francis *et al.* [*V.B.* **24,** 995].

Doyle, T. M. (1954). **Isolation of Johne's bacilli from the udders of clinically affected cows.**—*Brit. vet. J.* **110,** 215-218. [Author's summary copied *verbatim*.] **3420**

The udder tissue of thirty-four cows clinically affected with Johne's disease was examined microscopically and culturally for the presence of Johne's bacilli. Positive cultures were obtained from the udders of two cows.

The excretion of Johne's bacilli in the milk of clinically affected cows would appear to be relatively rare and probably occurs only in the fulminating type of infection. It is improbable that this source of infection is of any practical importance in the spread of the disease.

I. Taylor, A. W. (1953). **Experimental Johne's disease in cattle.**—*J. comp. Path.* **63,** 355 - 367. [Abst. from author's summary.] **3421**

II. Taylor, A. W. (1953). **The experimental infection of cattle with varieties of *Mycobac-***

terium johnei **isolated from sheep.**—*Ibid.* 368-373. [Author's summary slightly modified.] **3422**

I. An account of the results of administering culture of *M. johnei* either by mouth or by i/v injection to 12 calves.

II. The pigmented and Icelandic varieties of *M. johnei* isolated from sheep were capable of producing clinical Johne's disease in cattle. Both varieties retained their characteristic cultural requirements and the orange colour of the pigmented type was unaffected after one passage through cattle.

STUART, P. (1954). **Satellitism in cultures of** *Mycobacterium johnei.* **—** *Vet. Rec.* **66,** 305-306. [Author's summary copied *verbatim.*] **3423**

The presence of subsurface colonies of a staphylococcus and of some filamentous non-acid-fast bacilli stimulated growth of *M. johnei* on the surface of oleic albumin, *M. phlei* extract agar.

SPEARS, H. N. (1954). **Carriers of swine erysipelas. —** *J. comp. Path.* **64,** 152-156. [Author's conclusions modified.] **3424**

The red marrow of each of 348 long bones, selected at random from individual pigs killed at an abattoir, was examined by culture and by inoculation tests in mice and pigeons for the presence of *E. rhusiopathiae.*

By one method, later found to be insufficiently sensitive, the organisms were isolated in culture from 34 of 204 bones, but only from eleven of these was there confirmation by inoculation tests.

By a second and more sensitive method, cultures were obtained from 76 of 144 bones and of these 52 were confirmed by inoculation tests.

Many of the strains recovered were in the R phase and were of reduced pathogenicity for mice and pigeons. Mice appeared to be more susceptible to infection than pigeons.

LANGKAMP. (1952). Untersuchungen an Rotlaufstämmen aus den Tonsillen gesunder Schlachtschweine. **[Research on** *Erysipelothrix rhusiopathiae* **strains from the tonsils of healthy slaughter pigs.]**—*Berl. Münch. tierärztl. Wschr.* **65,** 128-129. **3425**

After examining the tonsils of 476 apparently healthy pig carcasses, 181 of which were suspected to be infected when material was examined microscopically, L. isolated *E. rhusiopathiae* from 13 by mouse inoculation.

—A. MAYR-HARTING.

CONNELL, R. (1954). *Erysipelothrix rhusiopathiae* **infection in a northern chipmunk,** *Eutamias minimus borealis.*—*Canad. J. comp. Med.* **18,** 22-23. **3426**

E. rhusiopathiae was isolated from the brain of a chipmunk which had been submitted for examination for rabies because it had bitten a boy.—R. GWATKIN.

SABA, B. & GIGLIETTI, A. (1954). Contributo sperimentale alla conoscenza del potere agglutinogeno specifico di *Erysipelothrix rhusiopathiae.* **[Agglutinating properties of** *E. rhusiopathiae.***]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 1001-1007. [English and French summaries.] **3427**

The authors were unable to demonstrate the presence of " Vi " antigen in suspensions of *E rhusiopathiae* which had been heated to 37°, 60° and 90°C., as postulated by Saba and Pajalunga [*V.B.* **22,** 324].—R.M.

OLSON, C., JR., BAGDONAS, V., ROLLINS, C. L. & BLORE, I. C. (1053). **The relation of silage to listeriosis in sheep.**—*Amer. J. vet. Res.* **14,** 202-208. [Abst. from authors' summary.] **3428**

Sheep were fed on two specific lots of maize silage which had been associated with an outbreak of *Erysipelothrix* (*Listeria*) *monocytogenes* infection. Groups were then inoculated *via* the carotid artery, intravenously and into the rumen respectively, using two cultures of the organism, one virulent and one which had become less virulent for sheep. Eight of the 29 sheep were given no silage after inoculation. Of these, one died in 29 days from the disease. No deaths and no symptoms occurred in those inoculated with the less virulent culture. Two of the 21 which were fed silage after inoculation died from the disease (in 22 and 36 days respectively) and another developed symptoms in 41 days.—F.E.W.

GRINI, O. (1951). Listerellose. [*Erysipelothrix* (*Listeria*) *monocytogenes* **infection in animals in Norway.**]—*VI. Nord. Veterinärmötet.* [Proceedings of the VI Scandinavian and Finnish Veterinary Conference, Stockholm, August 10th-11th 1951.] pp. 212-218. [In Norwegian. English summary.] **3429**

An account of a nine year study on *E. monocytogenes* infection in animals in Norway. Of a total of 108 cases diagnosed, 81 were in sheep, 21 in goats and the rest in the horse, canary, ox, fox and rabbit. The nervous form was commonly present, the causal organism being recoverable from the brain.

—J. EDWARDS.

THOMPSON, C. H., JR. (1954). **Unusual pathological changes in a case of fowl listeriosis.**—*Amer J. vet. Res.* **15,** 130-132. **3430**

T. gave a detailed description of the pathological changes in a pullet, 8 months old, from which *Erysipelothrix* (*Listeria*) *monocytogenes* was isolated. Superficially, the lesions could have been mistaken for those of visceral lymphomatosis.—E. A. GIBSON.

BARNUM, D. A. (1954). **A herd outbreak of mastitis caused by** *Pasteurella multocida.*—*Canad. J. comp. Med.* **18,** 113-119. **3431**

Thirty quarters in 14 animals were involved in a severe outbreak of mastitis due to *Past. septica* (*multocida*). There was abnormal secretion, loss of function, atrophy and fibrosis. Streptomycin, aureomycin and terramycin were tried. None was very successful, but streptomycin appeared to be the best.—R. GWATKIN.

FAULL, W. B. & HAWKSLEY, M. B. (1954). **Infectious keratitis in cattle, associated with** *Moraxella bovis.* — *Vet. Rec.* **66,** 311-312. [Authors' summary modified.] **3432**

Infectious keratitis of cattle was investigated on seven farms in Oxfordshire and Berkshire during the summer and autumn months of 1953.

The prominent early symptoms were photophobia and lachrymation, followed in most cases by corneal ulceration and opacity causing temporary blindness. *Haemophilus bovis* was isolated from 16 of 24 affected eyes examined. The organism was not demonstrable in eye-swabs from clinically normal calves and adult stock on farms free from the disease.

BAKOS, K., NILSSON, A. & THAL, E. (1952). Untersuchungen über Haemophilus suis. **[Differentiation and pathogenicity of** *H. influenzae-suis.***]**—*Nord. Vet.-Med.* **4,** 241-255. [In German. English and Swedish summaries. Abst. from English summary.] **3433**

Strains of *H. influenzae-suis* isolated from cases of polyarthritis in pigs and from swine influenza are indistinguishable from each other with regard to their cultural, morphological and biochemical characteristics. They have a common thermostable, species-specific antigen, and thermostable, variant-specific antigen fractions. With these antigens most strains could be divided, by precipitation, into three groups, *H. influenzae-suis* has specific agglutinative qualities against the erythrocytes of different animal species: the haemagglutinin is an antigen attached to the bacterial body. Polyarthritis following the intraperitoneal injection of *H. influenzae-suis* could be transferred from pig to pig by means of exudate from infected joints. This exudate contained the organism in pure culture. These findings confirmed those of Hjärre & Wramby [*V.B.* **13,** 30].

PILLEMER, L., BLUM, L. & LEPOW, I. H. (1954). **Protective antigen of** *Haemophilus pertussis.* —*Lancet.* **266,** 1257-1260. [Authors' summary modified.] **3434**

The authors studied the factors which influence the liberation of a protective antigen (P.A.) from *H. pertussis,* and the conditions required for the formation of a stromata-protective antigen complex and outlined a method for its large-scale production. It involves the extraction of P.A. from *H. pertussis* by sonic disintegration and its removal from the extract by the addition, in suitable proportions, of autoclaved stromata under controlled conditions of temperature, pH, and ionic strength.

GILBERT, S. J. (1954). **Observations on agents in faeces which inhibit** *Proteus* **and** *Salmonella.*—*Aust. vet. J.* **30,** 107-109. [Author's summary modified.] **3435**

G. recorded the occurrence of factors in the faeces of animals inhibiting either *P. mirabilis* or *S. typhi-murium* or both. He confirmed the usefulness of direct plating in revealing excessive numbers of *Proteus* in faeces frequently associated with dysentery in dogs.

GORDON, R. F. & TUCKER, J. (1954). **The isolation of** *Salmonella taksony* **from a chicken.** —*Mon. Bull. Minist. Hlth. Lab. Serv.* **13,** 73-74. [Authors' summary slightly modified.] **3436**

S. taksony was cultured from the liver of a chicken, 3 weeks old. This is the first report of the isolation of this organism from a fowl in Britain.

STEINIGER, F. & HAHN, E. (1953). Über den Nachweis von Keimen der Typhus-Paratyphus-Enteritis-Gruppe aus Vogelkot von der Stora Karlsö, Sweden. **[Salmonella species isolated from the faeces of sea birds.]** —*Acta path. microbiol. scand.* **33,** 401-408. [In German.] **3437**

S. paratyphi B was isolated three times, and *S. typhi* once from the faeces of the razorbilled auk, *Alca torda,* and of the foolish guillemot, *Uria aalge,* from the bird sanctuary on the Baltic island of Stora Karlsö off Gottland. *S. paratyphi B, S. typhi,* and *S. panama* were each obtained once from the faeces of the herring gull, *Larus argentatus.* The faeces of the common gull were negative for salmonella.

—W. R. BEIT.

SCHOOP, G. & MOSER, K. (1954). Zur Therapie der Salmonellen-Infektion (Flügellähme) der Tauben. [**Treatment of *Salmonella* infection in pigeons.**]—*Berl. Münch. tierärztl. Wschr.* **67,** 53-54. [English summary.] **3438**

The authors inoculated each of six valuable pigeons, with naturally-contracted *S. typhimurium* infection, i/m with 3·3 mg. streptomycin twice daily for 6 days. The clin. symptoms soon disappeared and the agglutination titre fell rapidly in four. The other two were given a double dose of the drug 8 weeks later and improved.—W. G. SILLER.

MURA, D., MARRAS, G., MANCA, F. & RIZZU, R. (1954). Sulla presenza di agglutinine specifiche anti-*Salmonella abortus ovis* in siero di sangue di donne in travaglio abortivo nel primo semestre di gravidanza. [**Abortion due to *S. abortus-ovis* in human beings in Italy.**]—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 956-959. [English and French summaries.] **3439**

In an area of Italy where *S. abortus-ovis* infection of sheep was prevalent, the authors examined blood samples from 11 women, the wives of shepherds, who had aborted. In 4 of them there were titres of 1 : 80–1 : 640 against *S. abortus-ovis*. The blood of 2 of the shepherds was also positive.—R.M.

STOCKER, B. A. D., ZINDER, N. D. & LEDERBERG, J. (1953). **Transduction of flagellar characters in salmonella.**—*J. gen. Microbiol.* **9,** 410-433. **3440**

The authors described the transduction of the flagellar characters of salmonella strains by means of phage lysates. From their experimental results they deduced that there are many distinct genes controlling the presence, antigenic character and function of the flagella, and that these may form part of an ordered gene array.—E. A. GIBSON.

VAN DRIMMELEN, G. C. (1954). **Brucellosis (contagious abortion) of cattle.**—*Fmg. S. Afr.* **29,** 151-152 & 159. **3441**

The authors described a scheme for the control of bovine contagious abortion in South Africa, in which the farmers themselves play a prominent part. They are expected to take blood samples for themselves, and send them to the regional veterinary department for examination. Vaccine is available direct from the veterinary institute at Onderstepoort, with detailed instructions for use by the farmer.
—C. C. BANNATYNE.

NAI, D. D. & PETRILLO, R. L. (1954). Classificazione di 130 ceppi di *Brucella* isolati dal bovino nella valle Padana. [**Classification of 130 strains of brucella isolated from cattle in the Po valley, Italy.**]—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 823-829. [English and German summaries.] **3442**

The authors typed 115 out of 130 strains of brucella isolated from cattle in the Po valley. From their biochemical properties, 6 were classified as *Br. melitensis* and 109 as *Br. abortus*. From their serological properties 4 were classified as *Br. melitensis,* 107 as *Br. abortus,* and 4 as intermediate types. These figures indicate an increase in the proportion of cattle infected with *Br. melitensis,* as compared with those given by Marchi in 1934 [*V.B.* **6,** p. 499], which were derived from the same region of Italy.—R.M.

VOCINO, G. & GUALTIERI, M. (1954). L'impiego della cromatografia su carta nella sierodiagnosi della brucellosi. [**Paper chromatography in the serological diagnosis of brucellosis.**]—*Atti Soc. ital. Sci vet., Cortina d'Ampezzo,* 1953. **7,** pp. 941-945. [English and French summaries.] **3443**

Using a filter paper chromatographical technique based on that described by Hess & Roepke [*V.B.* **22,** 943], the authors examined 200 sera which were either positive or negative to the agglutination test, and found that the results of both tests agreed completely. Of 98 sera which had given doubful reactions to the agglutination test, 32 were considered to be positive, 55 negative, and 11 remained doubtful when examined by the technique described.
—R.M.

ROMAGNOLI, A. (1954). Il comportamento della prova opsonocitofagica nella brucellosi sperimentale degli ovini. [**The opsonin test in experimental brucellosis in sheep.**]—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 815-820. [English and French summaries.] **3444**

R. determined the opsonic index of 9 sheep experimentally infected with *Br. melitensis*. It increased from 3–13 at the time of infection to 52–59 four months afterwards.—R.M.

JACOTOT, H. & VALLÉE, A. (1951). Identification en France des premiers cas de mélitococcie du lièvre. [*Brucella melitensis* **infec- in hares in France.**]—*Bull. Acad. Nat. Méd.* **135,** 430-432. **3445**

Three cases of *Br. melitensis* infection in hares, confirmed both bacteriologically and serologically, were reported from Picardy; the authors discussed the implications of these findings.—G. P. MARSHALL.

HAMILTON, P. K. (1954). **The bone marrow in brucellosis.** — *Amer. J. clin. Path.* **24,** 580-587. [Abst. from author's summary.] **3446**

Aspirated iliac bone marrow was studied in 30 patients with brucellosis. *Br. melitensis* was recovered from 26 from the peripheral blood on multiple cultures and in 12 from single aspirations of the marrow. Granulomatous lesions were found in 17 of the 18 from whom adequate samples of marrow were obtained for histological study. In 8, aggregates of epithelioid cells were present in the marrow smears.

BOHL, E. H., POWERS, T. E. & FERGUSON, L. C. (1954). **Abortion in swine associated with leptospirosis.**—*J. Amer. vet. med. Ass.* **124,** 262-264. [Abst. from authors' summary.] **3447**

In a herd of 29 pregnant sows, only 7 normal litters of pigs were farrowed during the current season. Abortions or the birth of a high proportion of dead or weak piglets were observed in 16 sows which were apparently clinically healthy.

Of the 19 sows tested, all were serologically positive to *L. pomona* and serologically negative for brucellosis. Large numbers of leptospira were observed in material from kidney and liver suspensions made from a weak piglet killed six hours after birth; *L. pomona* was isolated from the blood and kidney.

Leptospira pomona was considered the cause of the abortions. The authors discussed the probable method by which a leptospiral infection may initiate abortions in pigs and cattle.

BATTY, I., THOMSON, A. & HEPPLE, J. R. (1954). **The active immunisation of newborn lambs against pulpy kidney disease (*Cl. welchii* type D enterotoxaemia).**—*Vet. Rec.* **66,** 249-254. [Authors' summary modified.] **3448**

Lambs from non-immune, naturally immune, and artificially immunized ewes were satisfactorily immunized against pulpy kidney disease (enterotoxaemia due to *Cl. welchii* Type D) by two injections of 2 ml. of activated alum-precipitated toxoid, the first injection being given within three days of birth.

Lambs from non-immune and naturally immune ewes were satisfactorily immunized by this method even when the first injection of antigen was accompanied by the injection of a prophylactic dose of heterologous pulpy kidney antiserum into a different site.

When, in the lamb, a high level of passive antitoxin was present at the time of the first injection the best result was obtained when at least four weeks elapsed before the second injection.

COHRS, P. & SCHULTE, F. (1952). Typhlitis infectiosa (Enteritis necroticans) beim Kaninchen. Vergleichende Betrachtungen zum Darmbrand des Menschen. **[Infectious necrotic typhlitis in rabbits.]**—*Schweiz. Z. allg. Path.* **15,** 739-751. [English and French summaries. Abst. from English summary.] **3449**

The authors reported an epidemic disease in rabbits, characterized anatomically by intense oedema of the wall of the appendix and colon and by necrotic typhlitis and colitis. Multiple miliary toxic necroses are also regularly observed in the liver. They described the vascular lesions in the oedematous portions of the intestine, which play a significant role in the pathogenesis of the disease. They discussed the aetiological role of *Cl. welchii* together with other factors, and the possible relationship of the disease to intestinal gangrene in human beings.

PAULUZZI, L. & CIMENTI, R. (1954). Comportamento dell'antitossina tetanica naturale e della glicemia, nel bovino, nel periodo ante e post-partum. Ulteriori considerazioni patogenetiche sul tetano puerperale. **[Tetanus antitoxin and glucose in the blood of cows before and after parturition.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 989-993. [English and French summaries.] **3450**

The authors examined the question of increased incidence of tetanus in cows at the time of parturition. They found that tetanus antitoxin was present in the blood of 7 out of 11 normal cows in late pregnancy and that there was no diminution of the antitoxin titre at parturition. They also determined the blood glucose levels of these cows before, during and after parturition, and suggested that changes in glucose metabolism may be responsible for predisposition to tetanus.—R.M.

DACK, G. M., SUGIYAMA, H., OWENS, F. J. & KIRSNER, J. B. (1954). **Failure to produce illness in human volunteers fed *Bacillus cereus* and *Clostridium perfringens*.**—*J. infect. Dis.* **94,** 34 - 38. [Authors' summary modified.] **3451**

The food poisoning potentialities of four strains of *Cl. welchii* and four strains of *B. cereus* were examined by feeding these organisms and/or their products of growth to human

volunteers. Under the experimental conditions employed these organisms seemed incapable of causing the food poisoning symptoms that have been attributed to them. It would seem that there is need for work to clarify the role of *Cl. welchii* and *B. cereus* as aetiological agents in food poisoning outbreaks. The authors discussed some of the conditions necessary for a valid test with human volunteers.

SZULMAJSTER, J., NISMAN, B. & COHEN, G. (1954). Sur le mécanisme de la formation des acides gras inférieurs chez les clostridies. I. Mise en évidence de la thiolase et de la β-cétohydrogénase. **[Mechanism of the formation of lower fatty acids by clostridia. I. Thiolase and β-ketohydrogenase.]** — *C. R. Acad. Sci., Paris.* **238,** 164-166. **3452**

The authors described the synthesis of lower fatty acids by *Cl. butyricum*. Thiolase and β-ketohydrogenase act as catalysts. Butyric acid synthesis is similar to that which takes place in the liver.—R.M.

ADLER, H. C. (1954). **Experimental investigations into the treatment of bovine genital vibriosis. Preliminary report.**—*Nord. Vet-Med.* **6,** 214-218. [In English. German and Danish summaries. Abst. from English summary.] **3453**

Various penicillin-streptomycin preparations were applied locally to 49 heifers infected experimentally, infection having been ascertained by means of a biopsy method; 26 were cured. The best result was obtained with 20 ml. of " tardomycin " (a proprietary preparation consisting of a streptomycin product and penicillin) on two consecutive days (12 cured out of 18). Three *V. fetus* negative heifers given a 20 ml. dose of this substance 24 hours after insemination with semen from an infected bull remained healthy, whereas one untreated control heifer was infected.

MARTIN, C. A. (1954). **Foot-rot elimination is a major project.**—*N. Z. J. Agric.* **88,** 273 & 275-276. **3454**

M. described a full scale foot rot elimination project which was successfully carried out in the early autumn on a 585 acre farm running 1,800 sheep. Foot rot can be eradicated from the majority of farms where it is prevalent if the elimination project is carefully planned and is given precedence over all other current farming operations. Good facilities and equipment to do the job are essential.

—A. ACKROYD.

JEŽIĆ, J. (1953). Problem tuberkuloze i bruceloze u BiH. **[TB. and *Brucella* infection in the province of Bosnia-Hercegovina, Yugoslavia.]**—*Veterinaria, Sarajevo.* **2,** 580-586. [In Croat. English summary pp. 448-449.] **3455**

An account of a programme for the eradication of brucellosis and of TB. in the province of Bosnia-Hercegovina. Both infections have a low incidence.—I. MARTINI.

BENNETT, I. L., JR. & BEESON, P. B. (1954). **Bacteremia : a consideration of some experimental and clinical aspects.**—*Yale J. Biol. Med.* **26,** 241-262. [89 refs.] **3456**

A review of experimental studies of bacteraemia presented as a basis for an understanding of its clinical significance. The authors discussed: entry of bacteria into the bloodstream from intravascular and extravascular foci of infection; fate of bacteria in the bloodstream (factors influencing the removal of injected bacteria; rôle of reticulo-endothelial system and of polymorphonuclear leucocytes in their removal); clinical considerations. Clinically, bacteraemias are continuous or intermittent. Continuous bacteraemia is a sign of serious infection. The authors commented on blood-cultures for diagnosis, the problem of negative blood-cultures, bacteraemia and specific antibodies, and the presence of diphtheroids as contaminants.—W. R. BETT.

FULLER, C. J. (1953). **Farmer's lung : a review of present knowledge.** — *Thorax.* **8,** 59-64. **3457**

Farmer's lung, a condition in man resulting from exposure to mouldy hay first described from north-west England in 1932, has since been noted in other parts of the country while a similar condition has been described from Sweden by Tornell (1946) as thresher's lung.

The course of the disorder may be divided into three phases: (1) the acute isolated attack, (2) the subacute and more chronic condition which shows a spontaneous tendency to recover, and (3) the chronic and irreversible phase where secondary lung changes such as emphysema and fibrosis have occurred as a result of repeated exposure over a period of years.

In this review F. gave details of the clinical and radiological features of the disease, recorded several cases from Devonshire, and discussed the etiology of the condition. The hypothesis he favours is that farmer's lung is the result of a miliary inflammatory response to irritation of the bronchial epithelium by

mould spores and vegetable débris and of a slow sensitization of the individual.

—G. C. AINSWORTH.

BLAXLAND, J. D. & MARKSON, L. M. (1954). **Observations on the transmissibility and pathogenesis of moniliasis in turkey poults.**—*Brit. vet. J.* **110,** 139-145. [Authors' summary modified.] **3458**

Enteral and parenteral administration of a culture of *Candida albicans* produced lesions in most of the inoculated and in-contact poults and subclinical infection in a few of them, though none developed symptoms. Administration of a suspension of crop scrapings from field cases of the disease produced similar results. There was no evidence of the presence of an endotoxin in the yeast. *C. albicans* may be present in birds as a commensal and may even cause gross lesions in the crop, without any sign of clinical disease.

BAKERSPIGEL, A. (1954). **A preferred method for the routine identification of Candida.**—*J. infect. Dis.* **94,** 141-143. [Author's summary modified.] **3459**

C. albicans can be identified in 1 to 3 days, by culture on maize-meal agar, by the presence of chlamydospores which are thick-walled, spherical, enlarged cells, 6·9 to 17·2 μ in diameter (with or without buds or secondary chlamydospores), borne singly or in bunches on the tips of sausage-shaped or filamentous pseudohyphae (chlamydophores).

AKÜN, R. (1953). Chromoblastomykose beim Pferd. **[Chromoblastomycosis in the horse.]** *Dtsch. tierärztl. Wschr.* **60,** 519. **3460**

A tumour removed from the nasal septum of a horse at the Military Veterinary Academy at Ankara was diagnosed as chromoblastomycosis (*Phialophora verrucosa* infection). The author gave details of the histological appearance of the infected tissues. The causal organism was not cultured.—G. C. AINSWORTH.

CEDERVALL, A. (1954). Über Streptothrikose bei Karnivoren. **[Streptothricosis in dogs.]** —*Nord. VetMed.* **6,** 159-172. [In German. English and Swedish summaries.] **3461**

C. reported an investigation of 40 cases of *Streptothrix canis* infection in carnivores (24 dogs, 12 cats, 2 otters, a silver fox, and a mink) at the Veterinary College, Stockholm during 1926-51.

P.M. findings were predominantly an exudative inflammation of the serous surfaces, usually in the form of pleurisy. In 15 cases abscesses were demonstrated in the skin. The liver, spleen and spinal meninges were rarely affected.

Histological examination revealed acute or chronic granulation tissue with abscesses containing one or more colonies of the organism. It was isolated from 38 cases.

The disease took an insidious, afebrile and protracted course and the incidence was highest in cats and hunting dogs. C. considers that infection occurs through skin wounds, the respiratory passages, and possibly the digestive tract.—G. C. AINSWORTH.

HOWELL, A., JR. & FITZGERALD, R. J. (1953). **The production of acid phosphatase by certain species of *Actinomyces*.**—*J. Bact.* **66,** 437-442. **3462**

In experiments using *p*-nitrophenyl phosphate as substrate 10 strains of *Actinomyces israeli* or *A. israeli*-like organisms and 2 of *A. naeslundi* were shown repeatedly to produce acid phosphatase. The optimum hydrogen ion concentration for phosphatase activity varied with the temperature of incubation. There appear to be significant differences in the types of acid phosphatase produced by *A. israeli* and *A. naeslundi* while it was not possible to demonstrate phosphatase production by 2 strains resembling *A. bovis*.—G. C. AINSWORTH.

GRAY, D. F. & TURNER, A. W. (1954). **Viability and immunizing potency of freeze-dried bovine contagious pleuropneumonia culture-vaccine.** — *J. comp. Path.* **64,** 117-126. [Authors' summary modified.] **3463**

Bovine contagious pleuro-pneumonia vaccine as described by Turner *et al.* [*V.B.* **6,** p. 226] (living culture of the organism in BVF-OS medium) was lyophilized by freeze-drying. After an initial fall to about 1% of the original number, the viable count further decreased only slightly during at least 41 months.

After 27 months' storage at room temperature, vaccine was reconstituted with distilled water and used to vaccinate 30 head of cattle intracaudally.

The reconstituted vaccine, which contained in the standard dose about 10^6 viable organisms, gave rise to tail reactions and complement-fixation responses that were more delayed, less frequent and less extensive than is usual after the use of fresh liquid vaccine, in which the number of inoculated viable organisms is about 400 times greater. Nevertheless, 24 of the animals were satisfactorily immunized, including 6 of those which failed to develop either local or c.f. reactions.

The authors suggested that the number of

viable organisms in the inoculated dose is close to the minimum immunizing threshold and that greater success should be possible if the number of surviving viable organisms could be increased. They discussed possible means of doing this.

WHITE, R. W. (1954). **The use of penicillin in vaccine cultures of the causal organisms of contagious bovine pleuropneumonia** (*Asterococcus bovis*). — *Vet. Rec.* **66,** 293-295. [Author's summary modified.] **3464**

Penicillin at 100 units per ml., applied at two stages during the production of bovine contagious pleuro-pneumonia culture vaccine, (a) at the time of seeding and (b) after 3 days' incubation, reduced contamination very substantially. In a small experiment in cattle no resurgence in virulence could be demonstrated, and the cattle were successfully immunized. A field safety trial involving the use of over 13,000 doses of vaccine, also failed to demonstrate any untoward effect attributable to the use of penicillin. The immunizing power of penicillin treated vaccine is under test.

PRIESTLEY, F. W. & KARIB, A. A. (1954). **The effect of annual revaccination on the immunity of cattle to contagious bovine pleuropneumonia.**—*Vet. Rec.* **66,** 310. **3465**

The authors reported the results of experiments carried out in the Sudan to determine a suitable interval between successive vaccinations against bovine contagious pleuro-pneumonia. They found that vaccination at yearly intervals gave satisfactory results.—A.S.

KLIENEBERGER-NOBEL, E. (1954). **Micro-organisms of the pleuropneumonia group.**—*Biol. Rev.* **29,** 154-177. [Authors' summary modified.] **3466**

The organisms of the pleuropneumonia group, the organism of bovine contagious pleuro-pneumonia (PPO), the organism of ovine and caprine contagious agalactia (AGO) and pleuropneumonia-like organisms (PPLO), constitute a uniform class of microbes. They all grow in small colonies, which can easily be overlooked unless inspected microscopically. Their colony form, a dark central portion embedded in the agar medium and lighter peripheral zone, is characteristic. Their morphology is fundamentally simple. Small granular forms, of the size of vaccinia virus, called minimal reproductive units, can initiate the growth of the larger forms. The organisms lack rigid cell walls, but have a flexible outer boundary (' plasmalemma '). The shape and size of the organisms vary and depend on environmental conditions. Filamentous forms, small globules, disks and, on solid media, large flat forms are observed. Eventually, all these forms produce the minimal reproductive units.

The nutritive requirements of the members of the group are rather exacting. Some grow well on ordinary media, but most of them require an additional factor derived from serum and some other growth factors as well. Suitable media, are of paramount importance for the isolation and maintenance of these exacting organisms.

Identification of organisms of the pleuropneumonia group in material from lesions by means of fixed and stained preparations is very difficult and liable to error. In most cases only the established culture on penicillin-free media can be regarded as positive evidence of the presence of a PPLO in the specimen.

For the identification of species the serological method is most reliable, though some organisms can be distinguished by their special growth characteristics.

Pleuropneumonia organisms are killed by disinfectants, organic gold compounds, streptomycin and aureomycin, but not by sulphonamides and penicillin.

Some varieties of organisms have been found in humid soil, in decaying plant material and in polluted water, and others have been isolated from the organs or body fluids of animals, or from their mucous membranes. Those that are known as causes of animal diseases, though widely varying in their effect on their hosts, show an interesting similarity in their mechanism of infection. Though the diseases produced are often devastating and lethal, infection in the field does not readily follow exposure to the infective agent. However, outbreaks of the disease often occur in animals exposed to stress, and it appears that these events light up inapparent infection acquired some time previously; *i.e.*, the infection becomes manifest when the resistance of the animal is lowered. This has been observed in the great epizootics of bovine contagious pleuropneumonia and ovine and caprine contagious agalactia, where the second factor may be fatigue or, in the case of sheep and goats, parturition and lactation. In laboratory animals also a natural latent infection may become active on application of non-specific substances or of a second infective agent, which may or may not be itself pathogenic for the injected animal.

A new line of research has been opened by experiments on mixed infections. When the

non-mouse pathogens PPLO, PPO or AGO isolated from acute cases of disease are injected into these rodents, together with the mouse-pathogenic ectromelia virus, an infection is produced which is more severe than the ectromelia infection alone. The organisms grow abundantly in the organs and exudates of the mice, and the mixed infection can be transferred from one mouse to the other by injection of organ emulsions or exudates. However, when an avirulent PPLO, PPO or AGO or a saprophytic organism is used, together with the ectromelia virus, the organisms are ingested by the phagocytes and killed. This laboratory phenomenon suggests that it may be profitable to search for a second factor or second infective agent in natural diseases associated with PPLO, when a causal relationship between the organism and the disease has not been established.

It has been suggested that the organisms of the pleuropneumonia group may represent L phases of hypothetical bacteria. Though there is a morphological similarity between these two forms, evidence for such an assumption is so far lacking. It is possible to distinguish between the L phase of bacteria and genuine PPLO. Promotion of knowledge is better served if the two are regarded as distinct until evidence for a genetic relationship is forthcoming.

Classification of the pleuropneumonia group of organisms seems premature. They are not bacteria proper, nor are they viruses. From the size of their minimal reproductive units, from their simple morphology and from their fastidiousness in regard to nutritive requirements, they may be regarded as forms intermediate between viruses and bacteria.

CHUTE, H. L. & COLE, C. R. (1954). **Lesions in chicken embryos produced by pleuropneumonia-like organisms from chronic respiratory disease of chickens and infectious sinusitis of turkeys.**—*Amer. J. vet. Res.* **15,** 108-118. **3467**

The authors studied the pathological effects of 9 chicken and 4 turkey strains of pleuropneumonia-like organisms when inoculated into 7-day-old chick embryos by the yolk sac route. In embryos which died 2 to 7 days after inoculation there were hyperaemic, haemorrhagic and oedematous changes, while in those dying 8 to 14 days after inoculation there were vascular changes and inflammatory foci progressing to granulomatous nodules. No significant differences were detected between the strains from chickens and those from turkeys.

—E. A. GIBSON.

THURSTON, J. P. (1954). **Anaemia in mice caused by *Eperythrozoon coccoides* (Schilling, 1928).** — *Parasitology.* **44,** 81 - 98. [Author's summary copied *verbatim.*] **3468**

Experiments were designed to dissociate the effect of *Eperythrozoon coccoides* on the blood of mice from the effect of splenectomy. Both agents caused a decrease in number of red blood cells which was followed by an increased production of reticulocytes. The anaemic condition caused by the eperythrozoa persisted for more than 230 days after splenectomy, and parasites were seen in fluctuating numbers at intervals throughout this period.

At the height of infection, red blood cells were more fragile than normal in hypotonic saline and the blood clotted more rapidly than normal. No breakdown products of haemoglobin were detected in the urine or serum, and no haemolysins or haemagglutinins were detected in the serum. The white cell count was usually increased after heavy infections, the chief increase being in the number of myelocytes and other immature cells.

See also absts. **3614** (symposium on skin diseases); **3633** (effect of trichomycin on *C. albicans*); **3666** (milk-borne *S. typhi-murium* infection); **3668** (salmonella in liquid egg); **3669** (salmonella in duck eggs); **3702** (differentiation of bacteria by paper discs impregnated with culture media); **3708** (report, Australia); **3710** (report, (Sweden).

DISEASES CAUSED BY PROTOZOAN PARASITES

EYLES, D. E., JONES, F. E., JUMPER, J. R. & DRINNON, V. P. (1954). **Amebic infections in dogs.**—*J. Parasit.* **40,** 163-166. [Abst. from authors' summary.] **3469**

Entamoeba histolytica were cultured from 12, *E. coli* from two and *Endolimax nana* from one out of 143 faecal specimens taken direct from the rectum of apparently healthy dogs in a dog pound in Tennessee. Faecal culture was found to be the best method of diagnosis; other techniques used revealed only limited numbers. The authors suggested that cysts of amoebae are almost never passed in the faeces of dogs and that trophozoite forms are passed in very small numbers.

Alwar, V. S. & Ramanujachari, G. (1953). **Observations on the behaviour and transmissibility of *Trypanosoma evansi* in infected hatched-out chicks.**—*Indian vet. J.* **29,** 383-387. **3470**

The authors had previously failed to obtain viable infected chicks from eggs inoculated with *T. evansi*. This is an account of further work. Of 12 chick embryos inoculated with *T. evansi* on the 15th day of incubation, 5 apparently healthy chicks hatched out. Trypanosomes were demonstrable in wet blood films from the chicks up to a week after hatching; thereafter the infection was demonstrable only by mouse inoculation, up to the 27th day after hatching. The infection was transmitted to two day-old chicks by s/c inoculation of blood taken at the height of infection.—R. N. Mohan.

Ranquini, D. J. H. (1948). Leishmaniosis canina. **[Leishmania infection in dogs.]**—*Bol. Inf. Supl. cient. Col. nac. Vet. Esp.* **2,** No. 5. pp. 17-31. **3471**

The dog is an important reservoir of *Leishmania* infection in Spain. R. described the histology of the lesions. He postulated the existence of two phases of the organism, in tissues and in blood respectively. He stated that *Phlebotomus, Rhipicephalus sanguineus* and *Demodex folliculorum* are carriers. Treatment with neostibosan (diethyl-amino-*p*-aminophenyl stibinate) gave good results only against the asexual cycle. Diamidina (diamino-diphenyl-*p*-oxypentane) probably also destroyed the sexual phase as it gave complete cure. He emphasized the necessity for prophylactic measures.—F. A. Esteves.

Ioppolo, E. (1954). La tricomoniasi in provincia di Messina. **[Trichomonas infection in cattle in the province of Messina, Italy.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 320-323. [English and French summaries.] **3472**

In 1951 *Tr. foetus* infection was first observed in the province of Messina, Italy, and has spread rapidly since then. Out of a total of about 8,000 cows examined, 2,750 were infected.—R.M.

Nakabayasi, T. (1952). **[Immunological studies on the parasitic *Trichomonas* with special reference to the analytical comparison between agglomeration and agglutination.]**—*Osaka Daigaku Igaku Zassi.* **4,** 11-21. [In Japanese. English summary.] [Abst. in *Biol Abstr.* **28,** 1122. (1954), slightly modified.] **3473**

The object of these studies on *Tr. foetus* was to elucidate the difference between agglomeration and agglutination. Both agglomeration and agglutination appeared positive with both immune rabbit and infected g. pig sera. Agglomeration titre reached the maximum within 30 min. and then lowered gradually as the result of the dissociation of aggregated individuals, probably caused by their flagellar movement. On the other hand, the agglutination titre reached the maximum within about an hour, and thereafter retained the maximum level. It was concluded that no remarkable qualitative differences would exist between the agglomeratinogen and agglutinogen.

Elsdon-Dew, R. (1954). **Isospora infections in man.**—*S. Afr. J. Sci.* **50,** 271-272. **3474**

The author failed to infect an adult dog with oocysts of *I. hominis* isolated from human beings.—R.M.

Deiana, S. & Delitala, G. (1953). La coccidiosi dei piccoli ruminanti. I. Rilievi morfologici e biologici sui coccidi repertati in alcuni caprini della Sardegna (*Eimeria arloingi,* Marotel 1905). II. Enterite iperplastica da *Eimeria arloingi* (Marotel 1905) osservata nei caprini. Rilievi anatomo ed istopatologici. **[Coccidiosis in small ruminants. I. Morphology and histology of *E. arloingi* in goats in Sardinia. II. Hyperplastic enteritis in goats caused by *E. arloingi.*]**—*Riv. Parassit.* **14,** 165-170 & 201-212. [English summary.] **3475**

I & II. The authors isolated *E. arloingi* from young goats in Sardinia. They described the morphology of the organisms and the pathological findings in infected kids, which consisted of catarrhal hyperplastic enteritis.—R.M.

Deiana, S. & Delitala, G. (1954). La coccidiosi dei piccoli ruminanti. III. Indagini sistematiche sulla diffusione della coccidiosi degli ovini e dei caprini in Sardegna. **[Coccidiosis in small ruminants. III. Distribution of the disease in sheep and goats in Sardinia.]**—*Riv. Parassit.* **15,** 37-44. [English summary.] **3476**

The authors examined the faeces of 325 sheep and 80 goats, the majority of them apparently healthy. Oocysts of *Eimeria faurei* and *E. arloingi* were present in the faeces of 208 of the sheep, and of *E. arloingi* in the faeces of 31 of the goats. They concluded that coccidiosis of sheep and goats in Sardinia is more widespread than it had previously been considered to be.—R.M.

DAVIES, S. F. M. & KENDALL, S. B. (1954). **The effect of sodium sulphaquinoxaline and sodium sulphamethazine in interrupted schedules of treatment on the development of *Eimeria tenella*.**—*J. comp. Path.* **64,** 87-93. [Authors' summary slightly modified.] **3477**

In experimental coccidiosis in chickens interrupted schedules of treatment were compared using sodium sulphaquinoxaline at concentrations of 0·043% and 0·0645%, and sodium sulphamethazine at a concentration of 0·2% of the drinking water.

The type of interrupted treatment in which the drug was given on two successive periods of three days with a two day period without treatment proved more effective in limiting development of the second generation schizont than two day periods of treatment with intervals of three days.

ROBERTS, O. J. (1954). **The effect of cortisone on *Plasmodium berghei* infections.**—*Parasitology*. **44,** 58-64. [Author's summary slightly modified.] **3478**

Contrary to results previously published, cortisone did not cause a rapid increase of parasitaemia in mice or hamsters infected with *Pl. berghei,* and in some cases it had an inhibitory effect. The existence of a humoral agent restricting the multiplication of the parasites in the peripheral blood was suggested.

BRINGMANN, G. & HOLZ, J. (1953). Licht- und elektronemikroskopische Untersuchungen zum Sero-Farbtest auf Toxoplasmose nach Sabin und Feldman. **[Light and electron microscopic studies on the Sabin-Feldman test for toxoplasmosis.]**—*Z. Hyg. InfektKr.* **138,** 151-154. **3479**

Basing their findings on examination of the Sabin-Feldman test by light microscopy and by electron microscopy, the authors stated that the absence of staining of *Toxoplasma* by methylene blue in a positive reaction was due to the release of cytoplasmic ribonucleic acid, and not to the presence of an impervious layer formed around the organism by an antigen antibody reaction.—R.M.

HOLZWORTH, J. (1954). **Encephalitic toxoplasmosis in a cat.**—*J. Amer. vet. med. Ass.* **124,** 313-316. [Author's summary modified.] **3480**

H. described encephalitic toxoplasmosis in a cat. Although in hospital for observation of central nervous symptoms, the cat died as a result of chronic interstitial nephritis, complicated by an acute ascending pyelonephritis and associated retroperitoneal abscess apparently in no way related to the brain lesions. Benign adenomas of the pancreas and extensive bile duct cysts were also present. She suggested that toxoplasmosis should more often be considered as a possible cause for the puzzling disturbances of equilibrium and locomotion encountered in cats.

SUMMERS, W. A. (1953). **The chemotherapeutic efficacy of 2,4-diamino-5-*p*-chlorophenyl-6-ethylpyrimidine (daraprim) in experimental toxoplasmosis.**—*Amer. J. trop. Med. Hyg.* **2,** 1037-1044. **3481**

S. confirmed the findings of Eyles & Coleman [*V.B.* **23,** 868 & **24,** 741] that "daraprim" prevented the development of *Toxoplasma gondii* in mice, and protected a large percentage of mice from experimental *Toxoplasma* infection. The concentration of the drug in the food which was necessary to do this was 0·075–0·1%. Symptoms of toxicity in mice which received these concentrations of drug in the food were loss of weight, ruffled coat and inactivity.

—R.M.

FALLIS, A. M., PEARSON, J. C. & BENNETT, G. F. (1954). **On the specificity of *Leucocytozoon*.** — *Canad. J. Zool.* **32,** 120-124. [Authors' abst. modified.] **3482**

L. simondi was transmitted artificially to a gosling. Other goslings became infected naturally when exposed beside infected ducks. Negative results were obtained from attempts to transfer *L. simondi* artificially to ruffed grouse (*Bonasa umbellus*), chickens, turkeys, and pheasants and no natural infections were detected in these birds that were exposed for weeks beside infected ducks. *L. sakharoffi* could not be transmitted artificially to ducks, chickens, or a pigeon.

See also absts. **3569** (antagonism between Rous sarcoma and *Plasmodium* infection in fowls); **3633** (effect of trichomycin on *Trichomonas vaginalis*).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

VILLA R., B. (1953). Distribución en Mexico de los murcielagos vampiros familia Desmodontidae. **[Distribution in Mexico of vampire bats of the family Desmodontidae.]** — *Bol. Ofic. sanit. pan-amer.* **35,** 426-432. [English summary.] **3483**

Vampire bats of the genus *Desmodus* are present in 17 of the 31 States of Mexico. Mem-

bers of the genus *Diphylla* are less gregarious and less widely distributed and those of the genus *Diaemus* are still less common. The presence of *Desmodus* and *Diphylla* species presents a serious problem as they are reservoirs and carriers to cattle of paralytic rabies. The author discussed control measures. In regions with a dense population of these bats he recommended the use of wire screens in farm buildings, especially in byres, corrals and fowl houses. The lighting of places where cattle congregate at night may prevent attack. He pointed out that the majority of bats which are present in the American Continent are harmless and even useful. Control campaigns directed against vampire bats should therefore be entrusted to properly trained personnel so that only the marauders are destroyed.—F.E.W.

Dedié, K. (1952). Das Verhalten des MKS-Virus im bebrüteten Hühnerei. **[Behaviour of foot and mouth disease virus in embryonated eggs.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 22-23. **3484**

This is a summary of the studies made at Insel Riems. The standard Vallée O type g. pig strain has been given more than 300 passages in eggs. Virus appears in the egg fluids 12–18 hours after inoculation of the chorio-allantoic membrane, and during the next six hours in the embryos from which the highest concentration of virus is obtained. Although a dilution as high as 10^{-5} will infect eggs, only a concentrated suspension will infect g. pigs by the intradermal route and the local lesion is not followed by generalization. This strain will not immunize g. pigs if it is inactivated and is of no practical value for the immunization of cattle. It can be grown in cultures of fibroblasts from chick-embryos.

An egg adapted strain originating from the Vallée A g. pig strain differs in its behaviour in that there is a period of 12 hours—18–30 hours after inoculation—during which the chorio-allantoic membrane is non-infective. After return of infectivity it persists till about the 60th hour with the highest infectivity at about the 36th hour after inoculation.

Many attempts to obtain egg-adapted strains from cattle strains of virus have failed, even when the method of alternate passaging was adopted.—H. H. Skinner.

Barei, S., Camisani, V., Nardelli, L. & Santero, G. (1953). Il topino bianco nelle ricerche sul virus aftoso. **[The white mouse as experimental animal for foot and mouth disease research.]**—*Arch. Vet. Ital.* **4,** 523-537. [English, French, German and Spanish summaries.] **3485**

The authors reviewed the literature and gave an account of experiments with many field strains of virus maintained by passage in cattle or in culture. They gave details of the 50% end-point dilutions obtained with these strains in mice 3–6 days old when inoculated i/p. Simultaneous i/d titrations in g. pigs gave much lower end-points. Serum neutralization tests in mice were found much more sensitive than serum protection tests in g. pigs and by their use variant strains of Vallée A type were readily distinguished from each other. It was shown that infected mouse carcass extracts could be used as antigen in c.f. tests.

—H. H. Skinner.

Funes, E. S. (1953). Receptividad del hamster al virus de la fiebre aftosa. **[Susceptibility of the hamster to the virus of foot and mouth disease.]** — *Gac. Vet., B. Aires.* **15,** 157-160. **3486**

Fatal infections produced by a strain of F. & M. disease in hamsters, 1–8 weeks old, were similar in nature to those produced by this virus in young white mice or rats. Tissues had a high titre and material from the 12th passage in hamsters was highly infective for cattle.

—H. H. Skinner.

Ciaccio, G., Gasparini, G. & Ercoli, N. (1954). **The effects of vital dyes upon experimental foot and mouth virus infection of guinea pigs.** — *J. Immunol.* **72,** 299-306. [Authors' summary modified.] **3487**

G. pigs were infected with F. & M. disease virus and treated with vital dyes at the site of the inoculation. It had been found that inoculation followed immediately by the dye injection (janus green, victoria blue, malachite green, brilliant green, Giemsa solution or Nile blue) delayed or suppressed the development of primary and/or secondary dermal lesions. By inoculating the virus into the pad of the g. pig *after* dye injection, the protective activity was totally lost for victoria blue and Giemsa soln. An activity corresponding to an *average curative effect* was obtained with brilliant green and malachite green (total dose 62 mg./kg.), even when their first administration followed the infection by 3 hours. This was presumably at a time when active virus multiplication was already in progress. Under these conditions methyl green had some effect, victoria blue and janus green were less effective, while pyronine and Giemsa soln. were completely ineffective. The authors suggested that this effect on the

disease depends on some mechanism of inactivation of the virus by the dye.

The dye-treated animals which did not develop visible symptoms were susceptible to re-inoculation, while those in which the dye treatment showed a limited action only, were immune to a challenge consisting of 10,000 infective doses. The lack of immunity of such animals may be considered an additional evidence for cure and indicates that the virus has been suppressed *in vivo* before being able to determine an immunological defence.

CESSI, D. & LODA, P. (1954). La malattia di Aujeszky in val Padana. **[Aujeszky's disease in the Po valley, Italy.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo.* 1953. **7,** pp. 962-969. [English, French and German summaries.] Discussion: pp. 969-970. **3488**

During 1952 Aujeszky's disease was reported in the Po Valley at least 8 times, in dogs, cattle and pigs. However the authors failed to transmit the infection experimentally using material from cattle.—I. MARTINI.

OHDER, H. (1954). Ein Beitrag zur Lyssa-Diagnose. **[Diagnosis of rabies.]** — *Berl. Münch. tierärztl. Wschr.* **67,** 85-90. [English summary.] **3489**

White mice, intracranially inoculated with suspected material, are the most useful laboratory animals for the diagnosis of rabies, but as their symptoms are non-specific, Negri bodies must be demonstrated, preferably by the method used by Sellers and described by Brandenburg [*V.B.* **23,** 2531].—W. G. SILLER.

BENAZZI, P. & MANTOVANI, A. (1954). Ricerche sulla formazione e persistenza degli anticorpi neutralizzanti e fissanti il complemento in cani vaccinati contro la rabbia. **[Formation and persistence of neutralizing and complement-fixing antibodies in dogs vaccinated against rabies.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 840-845. [English and French summaries.] **3490**

The authors vaccinated 9 dogs against rabies, 7 of them with formolized vaccine and 2 with avianized vaccine. They performed virus neutralization tests and complement-fixation tests on serum taken before, and at intervals up to 160 days after, vaccination. The neutralization indices and c.f. titres increased up to the 70th day after vaccination, and then decreased. —R.M.

RAO, S. B. V., THAKRAL, B. M. & RAMNANI, D. R. (1953). **A note on the chick embryo vaccine against fowl-pox.**—*Indian vet. J.* **29,** 387-395. **3491**

Field fowl pox virus, after 15 chick-embryo passages, produced 95% ' takes ' (without untoward effects) and satisfactory immunity lasting 12 months.—R. N. MOHAN.

TAKEMOTO, K. K., ROBBINS, M. L. & SMITH, P. K. (1954). **The experimental chemotherapy of influenza viruses.**—*J. Immunol.* **72,** 139-147. [Authors' summary modified.] **3492**

Twelve compounds were found to inhibit the PR8 strain of influenza A virus in embryonated eggs, and six of these also inhibited the Lee strain of influenza B. Four of the inhibitors were viricidal as shown by *in vitro* tests at concentrations similar to those existing in the allantoic cavity. At high concentrations, only two compounds showed inhibitory effects when given by the yolk sac, a route different from that of the virus. The authors suggested that some of these compounds may not reach the site of viral growth when injected into the yolk sac.

When tested at various intervals after the infective process had started, four compounds were found to be ineffective when given only an hour after the virus. The other compounds were effective when given at intervals ranging from 3 to 12 hours after infection. Polymerized sodium salts of substituted benzoid sulphonic acids, one of the most effective compounds tested, prevented multiplication up to 12 hours after injection of virus.

Thirty-seven naturally occurring substances were tested for ability to reverse the inhibition caused by six of the compounds. Several substances were antagonistic to the virus inhibitors. Tryptophane reversed the inhibition caused by minimal concentrations of polymerized sodium salts of substituted benzoid sulphonic acids, but it did not affect higher concentrations. Riboflavin caused reversal of inhibition by Congo red, but only at low concentrations of the drug. Thiamin hydrochloride also reversed the inhibition caused by Congo red, apparently as a result of a direct combination of the drug with the antagonist, making the drug unavailable for action against the virus.

None of the compounds tested against influenza A infections in mice was found to have any effect in preventing infection.

SALK, J. E. (1952). **An interpretation of the significance of influenza virus variation for the development of an effective vaccine.**—*Bull. N.Y. Acad. Med.* **28,** 748-765. **3493**

S. described his work on antigenic variations and immunological characteristics of influenza virus. He emphasized that several strains of virus should be incorporated in vaccines in order to afford to complete protection

against influenza, instead of only a portion of the group of antigenically different pathogens responsible for epidemics of the disease.

—R.M.

Potel, K. (1952/53). Zur Histopathologie der infektiösen Anämie des Pferdes. III. Die männlichen Keimdrüsen. **[Histopathology of equine infectious anaemia. III. The testicles.]** —*Arch. exp. VetMed.* **6,** 363-372. **3494**

The histological findings in the testes of 12 foals, 18 months old, which had been inoculated parenterally with the mesenchymotropic virus of equine infectious anaemia, were characterized by severe and very rapid lymphocytic and histiocytic infiltrations during the febrile stage. Collagen fibres appeared later and there was evidence of vascular disturbance which may influence normal hormone production and spermatogenesis. These changes appear to be specific.—W. G. Siller.

Scott, G. R. (1954). **The virus content of the tissues of rabbits infected with rinderpest.**—*Brit. vet. J.* **110,** 152-157. [Abst. from author's summary.] **3495**

S. estimated the virus content of rabbit tissues infected with rinderpest and examined the immunological efficiency in cattle of the dried tissues. He discussed the significance of infected rabbit blood as a diluent in lapinized rinderpest vaccine.

Plowright, W. (1953). **The blood leucocytes in infectious malignant catarrh of the ox and rabbit.** — *J. comp. Path.* **63,** 318 - 334. [Author's summary modified.] **3496**

P. recorded the results of repeated examinations of the blood leucocyte picture in 11 cattle and 14 rabbits infected with a virulent " head-and-eye " strain of bovine malignant catarrh.

In cattle there was a progressive leucopenia commencing at about the same time as generalized enlargement of the lymph nodes. The leucopenia affected all cell types, but there was a relative mononucleosis, with the appearance of large primitive cell-types. In one animal which survived 40 days following the first reaction there was recurrent fever with polymorphonuclear leucocytosis.

In rabbits the response varied. In 9 there was a leucocytosis, in 3 a mild leucopenic response, in 2 no significant change in total counts. The leucocytosis was due to large numbers of cells which appeared to be abnormal large lymphocytes. In all cases there was an increasing proportion of non-granular cells during the reaction.

Oláh, P., Elek, P. & Szabó Szücs, J. (1953). **The role of the virus of contagious pustular dermatitis of sheep and goats in the etiology of the so-called " stinking lameness " in sheep.**—*Acta vet. hung.* **3,** 237-243. [In English. Russian summary.] **3497**

The virus of contagious pustular dermatitis (C.P.D.) was shown to be present in some lesions of " stinking lameness " [? foot rot or strawberry foot rot] in sheep. Attempts to reproduce the condition with C.P.D. virus were unsuccessful where hygiene was good. It is possible that C.P.D. lesions may facilitate entry of bacteria which cause " stinking lameness ".

—G. B. S. Heath.

Foggie, A. (1954). **Immunological studies on the infection of ovine enzootic abortion in young lambs.**—*J. comp. Path,* **64,** 141-151. [Author's summary copied *verbatim.*] **3498**

Lambs from ewes which had been infected with ewe abortion virus at the previous pregnancy, and from vaccinated ewes, were found to have positive titres to the complement-fixation test when less than three weeks old. This positive titre resulted from the absorption of complement-fixing antibodies from the colostrum. Lambs from infected mothers had negative titres. There is a possibility that some lambs born with infected membranes may have some immunity prior to the ingestion of colostrum. Experimental infection of ewe lambs from immune mothers failed to demonstrate that they were protected against abortion at their first pregnancy.

Watt, I. G. & Wallace, G. V. (1954). **Report of an outbreak of swine fever in Auckland.**—*N.Z. vet. J.* **2,** 7-9. **3499**

An account of an outbreak of swine fever early in 1954 in Auckland, New Zealand, which was traced to the feeding of swill from a licensed dealer, but which was found to have been obtained illegally from an unauthorized source (*i.e.*, a Naval shore establishment). The outbreak was rapidly controlled by rigorous measures. The authors emphasized the need for strict control of persons who may bring animal products, such as sandwiches and sausages, from overseas, including passengers arriving by air.—F.E.W.

Guarini, G. (1954). Sulla possibilità di dimostrare anticorpi devianti nel siero di suini immunizzati contro la peste suina. **[Demonstration of complement-fixing antibodies in the serum of pigs immunized against swine fever.]** — *Atti Soc. ital, Sci. vet., Cortina*

d'Ampezzo, 1953. **7,** pp. 764-768. [English and French summaries.] Discussion: pp. 768-769. **3500**

G. described the preparation of an antigen from kidney and spleen of pigs infected with swine fever, by extracting the ground-up tissue with alcohol and precipitating the extract with physiological saline solution. Using this antigen in the complement-fixation test, he claimed to be able to distinguish pigs immunized against or infected with swine fever from healthy pigs. —R.M.

Baldelli, B. (1954). Ricerche sperimentali sulla innocuità ed efficacia dei vaccini vivi a virus modificato (vaccini lapinizzati) contro la peste suina. **[Efficacy of lapinized virus as a vaccine against swine fever.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 858-873. [English and French summaries.] Discussion: pp. 873-874. **3501**

B. examined two proprietary avianized vaccines against swine fever, of American manufacture, and found that immunity was present in 8 pigs, 3 months old, at the 18th day and the 4th month following vaccination. He determined the γ-globulin content of the sera of vaccinated pigs by means of paper chromatography. —R.M.

Schwarte, L. H. & Mathews, J. (1954). **Aerosol properties of lyophilized hog cholera virus.** —*Vet. Med.* **49,** 233-234. [Authors' summary modified.] **3502**

An account of a series of transmisison experiments to determine the possible infection of susceptible pigs by aerosol dispersal of powdered lyophilized swine fever blood. Infection of susceptible pigs was accomplished by aerosol dispersal of powdered blood in an isolation unit. The aerosol was effective in transmitting the disease at least 30 min. after the powdered virus was explosively dispersed into the air.

Jennings, S. (1954). **Canine vesicular dermatitis.**—*Vet. Rec.* **66,** 145-146. [Author's summary modified.] **3503**

J. suggested the term 'canine vesicular dermatitis' for a skin disorder of adult dogs which was seen mostly in females. There are no general symptoms apart from those of pruritus. The lesions are primarily vesicles followed by rupture and scab formation and then by expanding areas with shedding epithelium at the periphery. He recorded 45 cases in which the predilection sites for lesions were the glabrous parts of the abdomen. The disorder recurred at regular intervals in a high proportion of cases. He discussed the similarity of the disease to herpes simplex of human beings and suggested that the canine condition may also be due to a virus.

McGaughey, C. A. (1953). **Infectious myelitis of cats : preliminary communication.**—*Ceylon vet. J.* **1,** 38-40. [Author's summary modified.] **3504**

A note on two cases, apparently unconnected, of a nervous disorder in young cats in Ceylon.

The author compared it with a similar disease, described by Martin & Hintermann [*V.B.* **23,** 1920], namely infectious myelitis of cats in Morocco; the signs and lesions resembled those described as occurring in the hyperacute forms of the North African disease.

There is some evidence that the condition is transmissible to young kittens by instillation of washings of the meninges, brain and cord.

No bacterial nor protozoan agent was evident.

Weiss, E. & Huang, J. S. (1954). **The infected cell count method of titration of feline pneumonitis virus.**—*J. infect. Dis.* **94,** 107-125. [Authors' summary modified.] **3505**

The authors described a tissue culture technique for virus assay based on the counting of infected cells. The agent of feline pneumonitis was used as the test organism, with the entodermal cell of the chick embryo as its host cell. Since feline pneumonitis had not previously been cultivated *in vitro,* this investigation also entailed the study of the characteristics of entodermal cells, the behaviour of the virus in tissue culture, and a survey of the principal factors responsible for high infectivity.

The best suited cells for this study were found to be those derived from an intermediate area of the avascular zone of the yolk sac of 4-day-old chick embryos. Explants from this area, 2 mm. in diam., under appropriate conditions each gave rise to a single layer of large vacuolated cells covering an area of about 1 sq. cm.

Feline pneumonitis virus readily developed in these cells and formed vesicles identical to those previously described in the yolk sac of chick embryos. Infected cells lysed 36 to 48 hours after inoculation and new cells were infected. The cycle was repeated until all the cells in the colony were lysed.

The infected cell count titration was based on the number of cells which were initially infected. Well developed cultures were inoculated

with a single diln. of an unknown specimen of virus. Some time during the first cycle of viral development, usually 30 hours after inoculation, the cultures were fixed and stained and the number of infected cells counted. The virus titre was then calculated from the count and the diln. used for inoculation.

The authors perfected the procedure to become as sensitive as the chick embryo technique and considerably more accurate. Counts carried out in quadruplicate revealed threefold and often twofold differences in titre.

Application of this method indicated that individual embryos varied in susceptibility to infection. Serum or an adequate substitute, was essential for high infectivity. Procedures which increased the rate of chance contact between virus and host cells, such as shaking the cultures, significantly increased the cell count. The entodermal cell cultures and the infected cell count method promise to be very useful for the study of many problems of host-viral relationship.

Anon. (1953). Misure ufficiali adottate contro la mixomatosi. **[Official measures for the prevention of myxomatosis in Italy.]**—*Zooprofilassi.* **8,** 583-585. **3506**

Myxomatosis of rabbits is a notifiable disease in Italy. Outbreaks in domestic rabbits are to be controlled by isolation, with slaughter and destruction of sick animals and segregation of the others. Where all the animals are destroyed, the restrictions are lifted after 15 days, if the premises are disinfected.

Outbreaks in wild rabbits are dealt with by the declaration of infected zones in which the animals are hunted and destroyed. There is prohibition of movement of rabbits into or out of the area without permission. Restrictions are lifted 6 months after the last reported case of infection.—I. W. Jennings.

Schoop, G. (1954). Die Myxomatose der Kaninchen. **[Myxomatosis in rabbits.]** — *Mh. Tierheilk.* **6,** 53-57. **3507**

A general account of myxomatosis. It is suggested that myxomatosis virus might develop from Shope's fibroma virus; the latter should therefore be employed for immunization with caution.—W. G. Siller.

de Blieck, L., Bosgra, O. & Hoogendoorn, H. (1954). Enting tegen myxomatosis van konijnen. **[Immunization against myxomatosis of rabbits.]**—*Tijdschr. Diergeneesk.* **79,** 1-8. [English, French, German and Spanish summaries.] **3508**

Four rabbits were vaccinated subcutaneously with Shope's fibroma virus and challenged after 15 days with myxomatosis virus of French origin (Jacotot) together with 5 unvaccinated controls. Of the controls 4 died from generalized infection and the fifth was killed *in extremis*. The immunized rabbits developed only a swelling at the site of injection.

—C. A. van Dorssen.

Daniels, J. B., Pappenheimer, A. M. & Richardson, S. (1952). **Observations on encephalomyelitis of mice. (DA strain).**—*J. exp. Med.* **96,** 517-530. **3509**

An account of a virus strain resembling those of the Theiler group but differing in certain clinical and pathological features from strains previously described.—Ian Davidson.

Gray, J. E., Snoeyenbos, G. H. & Peck, H. A. (1954). **Newcastle disease in turkeys. Report of a field outbreak.**—*J. Amer. vet. med. Ass.* **124,** 302-307. [Abst. from authors' summary.] **3510**

An account of an outbreak of Newcastle disease in turkeys, which spread slowly and largely in a subclinical form in various age groups. Blood serum samples taken from these groups, approx. five weeks after the infection started, demonstrated a considerable variation in status of ND immunity. There was absence of respiratory symptoms, partial or complete motor paralysis of one or both legs being the only constant symptom noted. The authors had observed a similar syndrome of ND in other turkey flocks.

Pathological changes were essentially microscopic, focal gliosis being occasionally accompanied by mild perivascular cuffings in the brain and spinal cord.

Williamson, A. P., Blattner, R. J. & Robertson, G. G. (1953). **Factors influencing the production of developmental defects in the chick embryo following infection with Newcastle disease virus.**—*J. Immunol.* **71,** 207-213. **3511**

In the production of the developmental defects of the lens, otocyst and neural tube the virus must be injected so as to reach susceptible structures immediately. The titre must be high and best results follow inoculation at 48 and 60 hours. The authors discussed the possible significance of the findings.—D. Luke.

Granoff, A. & Henle, W. (1954). **Studies on the hemolytic activity of Newcastle disease virus (NDV).**—*J. Immunol.* **72,** 322-328. [Authors' summary slightly modified.] **3512**

The haemolytic activity of NDV, as present

in allantoic fluid or suspended in phosphate buffered saline is greatly enhanced by dialysis against various media and by the diluents used in the titrations. It is most pronounced after dialysis against distilled water with subsequent restoration of isotonicity by sodium chloride and dilution in isotonic sodium citrate. The haemolytic activity of such preparations is further increased by various physical manipulations, *i.e.*, sonic vibration, repeated freezing and thawing, and osmotic shock. No evidence has been obtained as yet to indicate that these procedures cause the disruption of NDV into smaller haemolytic units.

GRANOFF, A. & HENLE, W. (1954). **Studies on the interaction of the large and small hemagglutinating components of Newcastle disease virus with red cells.**—*J. Immunol.* **72,** 329-339. [Authors' summary modified.] **3513**

Partially purified preparations of the L (large) and S (small) components of Newcastle disease virus were obtained from infected allantoic fluid and membrane suspensions, respectively, by differential centrifugation. The L component could be separated also from the infected tissues, but S could be detected in allantoic fluid only in relatively low concentrations. The S component was found to be partially sedimentable by centrifugal forces far in excess of those needed for removal of L. Suspensions of the L component revealed ID_{50}/HA ("50% infectivity dose"/haemagglutinin) ratios of the order of 10^6. In contrast, S preparations gave ratios as low as $10^{0.6}$ and generally below 10^2.

Whereas L was readily adsorbed on to red cells in the cold, only relatively small amounts of S appeared to combine with these cells under the same conditions.

No inhibitor of adsorption could be detected in S preparations. The data presented indicate either that the S component possesses greater eluting activity than L or that an elution-promoting factor is present in such preparations.

The L component readily caused haemolysis whereas S according to all indications lacks this property. When red cells were exposed to S and subsequently washed they resisted haemolysis by the L component. Heated S or control material had no such effect.

Only the L component showed the phenomenon of extension of titres in haemagglutinin assays upon repeated resuspension and settling of the red cells at 37°C. Only red cells previously exposed to L at 37°C. until stabilized could be agglutinated by dilute NDV-immune serum or were capable of agglutinating normal red cells. These properties, according to Burnet, are closely linked with haemolytic activity. The facts that S failed to reveal these reactions and was found to be non-haemolytic appear to be in agreement with this suggestion.

Under carefully graded conditions S precedes the L component in the receptor gradient.

The authors discussed various problems concerning the mechanisms of interaction of these components with red cells.

TORLONE, V. (1954). Studio di due ceppi di virus della pseudopeste isolati dal fagiano (*Phasianus colchicus*) e dalla starna (*Perdix perdix*). **[Strains of Newcastle disease virus from the pheasant and partridge.]**—*Vet. ital.* **5,** 107-127. [English, French and German summaries.] **3514**

Two strains of Newcastle disease virus were isolated from outbreaks of disease in pheasants and partridges and identified by serological and biological tests. The virus isolated from the pheasant was considered to be a distinct strain because of its superior haemolytic power, the low thermostability of its agglutinins and in particular, its very low virulence for fowls.

—I. W. JENNINGS.

QUESADA, A. (1954). Studio comparativo delle caratteristiche antigeniche di alcuni ceppi di virus di Newcastle isolati in Sardegna e nel continente Italiano. **[Comparison of the antigenic characteristics of some Italian strains of Newcastle disease virus.]**—*Atti Soc. ital. Sci. vet., Corlina d'Ampezzo,* 1953. **7,** pp. 917-922. [English and French summaries.] **3515**

Twelve strains of Newcastle disease virus isolated from Sardinia and the Italian mainland were antigenically similar.—R.M.

PLACIDI, L. & SANTUCCI, J. (1953). L'influence de la congélation sur les propriétés immunisantes du vaccin adsorbé contre la maladie de Newcastle. **[Effect of freezing on the immunizing activity of a Newcastle disease adsorbate vaccine.]**—*C.R. Soc. Biol., Paris.* **147,** 1709-1710. **3516**

Freezing diminished but did not destroy the activity of the vaccine.—D. LUKE.

GAGLIARDI, G. (1954). La vaccinazione per via orale contro la pseudo-peste dei polli. **[Oral vaccination of fowls against Newcastle disease.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 911-917. [English and French summaries.] **3517**

G. administered attenuated Newcastle disease vaccine mixed with the food to 16 fowls

aged 3–6 months, and mixed with the drinking water to 61 fowls aged 10 days to 2 months. Similar numbers of each age group were vaccinated by intradermal inoculation. The sera of all birds and unvaccinated controls were examined by the haemagglutination inhibition test 12 days after vaccination. The protection afforded by mixing vaccine with the food, as judged by the presence of titres in the sera of over 1:40, was slight, but the administration of vaccine in the drinking water gave results comparable to those of intradermal inoculation. —R.M.

Schoop, G. (1954). Menschliche Infektionen mit Newcastle-Virus. **[Infection of human beings with Newcastle disease virus.]**—*Dtsch. tierärztl. Wschr.* **61,** 162-164. **3518**

Two cases were reported where laboratory workers were infected with Newcastle disease virus. They were characterized by unilateral, painful conjuctivitis, photophobia and enlargement of the pre-auricular lymph nodes. They ran a benign course.—W. G. Siller.

Pulsford, M. F. (1953). **Possible P-Q type variation in infectious laryngotracheitis virus.** [Correspondence.]—*Nature, Lond.* **172,** 1193-1194. **3519**

A strain of the virus of acute infectious laryngotracheitis, isolated from hens in an outbreak in South Australia, showed some resistance in the pock neutralization test to its homologous and other infectious laryngotracheitis antisera and was almost completely resistant after storage at dry ice temperature for 8 months. No spread of an explosive epidemic had followed the outbreak suggesting that a Q phase of reduced pathogenicity was developing as a means of inter-epidemic survival. —A. Ackroyd.

Meyer, K. F. & Eddie, B. (1952). **Reservoirs of the psittacosis agent.**—*Acta trop. Basel.* **9,** 204-215. [In English. French and German summaries.] **3520**

The authors discussed the role of fowls, turkeys, pigeons, domestic ducks, and wild birds as reservoirs of psittacosis virus, and the incidence of viruses of the psittacosis group in calves, sheep, cats, mice, hamsters and opossums.—R.M.

Fastier, L. B. (1954). **Infectivity titrations of the viruses of Western equine encephalomyelitis and Newcastle disease by tissue culture methods.** — *J. Immunol.* **72,** 341 - 347. [Author's summary modified.] **3521**

The cytopathogenic changes which occur in tissue cultures infected with the viruses of Western equine encephalomyelitis or of Newcastle disease were utilized for infectivity titrations of these agents. The reproducibility and degree of accuracy exhibited by suspended tissue culture titrations compared favourably with those obtained by conventional animal inoculation methods.

Levine, S., Puck, T. T. & Sagik, B. P. (1953). **An absolute method for assay of virus haemagglutinins.**—*J. exp. Med.* **98,** 521-531. [Authors' summary modified.] **3522**

The authors described a rapid and precise method for determination of absolute numbers of haemagglutinating particles present in virus suspensions. It involves spectrophotometric measurement of the number of r.b.c. dimerized [a dimer being two r.b.c. joined together by a virus particle] by the virus under conditions in which formation of larger aggregates is precluded. They compared results of this procedure with those of titrations based on egg infectivity and the polystyrene microsphere electron micrography for influenza virus; and with plaque count titrations on chick embryo cell monolayers in the case of the virus of Newcastle disease. The agreement is well within the limits expected in view of the different quantities which the various procedures measure.

The conversion factor for transforming titre in haemagglutinating units based on the pattern procedure into absolute number of agglutinating particles is the same for influenza and Newcastle disease virus.

The precipitation of r.b.c. by Newcastle disease virus at 23°C. is optimal at pH values between 6·2 and 5·8.

Parnas, J. (1953). Nowa radziecka systematyka wirusów. **[New systematic Soviet nomenclature of viruses.]**—*Méd. vét., Varsovie.* **9,** 55-56. [In Polish.] **3523**

A note on the new system of classification and nomenclature of viruses proposed by the Russian worker Ryzhkov (1952), based on their properties and their relationship. R. criticized the classification of Holmes, and disagreed with the conception of relating the rickettsia with viruses. The Ryzhkov grouping comprised the five classes:—I. Eucristallinae, seen under the electron microscope as little rods: including the viruses of F. & M. disease and encephalomyelitis; II. Pseudocristallinae; III. Gamaleyae; IV. Arthropodophilae, including the Order of Neurotropiales in which he classed the virus of louping-ill (*Encephalotropus ovis*); V. Chlamydozoa, including the " giant " viruses

with particle size of 700μ, such as influenza (*Pneumotropus grippae*) and swine influenza (*P. porci*).—J. R. MITCHELL.

BARNARD, W. G. (1953). **Heartwater immunization under field conditions in Swaziland.**—*Bull. epiz. Dis. Afr.* **1,** 300-311 & 313. [In English and French.] **3524**

A flock of susceptible sheep is maintained and individuals infected as required, infected blood being used as vaccine. Calves receive blood without further treatment, adult cattle require treatment with sulphamethazine after inoculation. Difficulties of storage of material necessitate infected sheep being transported to the site of immunization before being bled and adult cattle are brought to the immunization centre for professional supervision during immunization.—W. S. MARSHALL.

CAPORALE, G., MIRRI, A. & ROSATI, T. (1954). La febbre " Q " quale zoonosi. **[Q fever as a zoonosis.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 13-96. [English and German summaries pp. 77-78. Discussion: pp. 85-96.] **3525**

A comprehensive review, with a map showing world geographical distribution of Q fever, and 243 references.—R.M.

CARLEY, J. G. & POPE, J. H. (1953). **The isolation of *Coxiella burneti* from the tick *Ixodes holocyclus* in Queensland.**—*Aust. J. exp. Biol. med. Sci.* **31,** 613-614. **3526**

The authors isolated *Rickettsia burneti* from *I. holocyclus* in Queensland. Natural infection of this species had not previously been recorded.—M. D. MURRAY.

See also absts. **3614** (symposium on skin diseases); **3670** (Indian training centre for veterinary virus vaccine manufacture); **3708** (report, Australia); **3710** (report, Sweden).

IMMUNITY

WAGNER, V. (1954). Der Einfluss der Elektrolyten auf die Kollodium-Agglutination. **[Influence of electrolytes on collodium-agglutination.]** — *Schweiz. Z. allg. Path.* **17,** 94-99. [English and French summaries. English summary modified.] **3527**

W. studied the action of various concentrations of electrolytes on the agglutination of antigen-coated collodium particles by antibody. Calcium chloride increased the titre and strength of the reaction without altering its specificity. A solution containing 9·8 g. NaCl, 0·15 g. $CaCl_2$ and 0·1 g. $NaHCO_3$ per litre was found to be optimal. Other salts caused pseudo-agglutination or precipitated the protein antigen.

STAVITSKY, A. B. (1954). **Micromethods for the study of proteins and antibodies. I. Procedure and general applications of hemagglutination and hemagglutination-inhibition reactions with tannic acid and protein-treated red blood cells. II. Specific applications of hemagglutination and hemagglutination-inhibition reactions with tannic acid and protein-treated red blood cells.**—*J. Immunol.* **72,** 360-367 & 368-375. [Author's summaries modified.] **3528**

I. S. described the procedures for carrying out the haemagglutination and haemagglutination-inhibition reaction with tannic acid-protein treated red blood cells. He described the advantages, limitations and general applications of these methods which he had illustrated experimentally.

II. S. described the applicability of the haemagglutination and haemagglutination-inhibition methods to the solution of various immunological problems. These include the analysis of anti-protein sera of varying specificity from different species, the determination of the heterogeneity of antigens and antibodies, the analysis of proteins in mixtures of proteins, the detection of non-precipitating or poorly avid antibodies, and the analysis of supernatants of antigen-antibody mixtures. It was shown that egg albumen was adsorbed about as well as conalbumen to tannic acid-treated r.b.c., but that the egg albumen-anti egg albumen system was much less sensitive than the conalbumen-anti conalbumen system for the detection of antibody and antigen. He discussed the advantages and disadvantages of the great sensitivity of these methods. He also discussed the apparent ability of the reactions to detect non-precipitating and poorly avid antitoxins.

He suggested explanations for the lack of correlation between haemagglutination titre and unitage of human and g. pig antitoxins and the good correlation between these figures for rabbit antitoxins.

GIRARD, K. F. & MURRAY, E. G. D. (1954). **The influence of a sustained monocytosis upon the antibody response in rabbits to various antigens.**—*Canad. J. Biochem. Physiol.* **32,** 1-13. **3529**

I/v injections of a chloroform-soluble, non-toxic, non-antigenic lipoid substance, M.P.A.

(monocyte-producing agent) extracted from *Erysipelothrix* (*Listeria*) *monocytogenes*, maintained a high degree of monocytosis in rabbits. When animals with such an artificially produced monocytosis were immunized i/v with *Salmonella typhi*, staphylococcus toxoid, and horse serum respectively, they produced considerably higher titres than did control animals not inoculated with the M.P.A.—THOMAS MOORE.

I. HUMPHREY, J. H. & MCFARLANE, A. S. (1954). **Rate of elimination of homologous globulins (including antibody) from the circulation.**—*Biochem. J.* **57,** 186-191. [Authors' summary modified.] **3530**

II. HUMPHREY, J. H. & MCFARLANE, A. S. (1954). **Fate of homologous antibody in the rabbit.**—*Ibid.* 195-203. [Authors' summary modified.] **3531**

I. Radioactive antibody and normal globulin were prepared by injecting [*carboxy*-^{14}C] lysine and [*carboxy*-^{14}C]phenylalanine into rabbits hyperimmunized against pneumococcus type III. These were transfused into normal and immune rabbits.

The specific radioactivity of antibody transfused into normal rabbits remained unchanged for as long as 3 weeks, indicating that molecules of this kind do not exchange their amino acid carbon while they remain in the circulation. The concentration of antibody and the specific radioactivity of transfused globulin declined at a steady rate of approx. 12·5% per day, the globulin rate being fractionally lower than that of the antibody. The authors suggested that the true rate of elimination of these globulin-like molecules is given by the decline of the serological label which is irreversibly lost rather than by isotopic labelling even where the isotopically-labelled proteins are transfused.

The specific radioactivities of transfused labelled antibody and labelled normal globulin in the plasma of immune rabbits both declined at the same approx. rate of 12·5% per day. The rates of antibody and normal-globulin elimination are shown to be approximately the same and independent of the rate of production. Hence the weight of these proteins produced in a given interval is proportional to their average plasma concentration over the same period. The authors gave an example of the use of this information to calculate absolute rates of antibody production by a rabbit at various stages of hyperimmunization.

II. The authors studied the distribution of radioactivity in the tissues of a rabbit killed and exsanguinated by perfusion 8 days after receiving a transfusion of [^{14}C]phenylalanine-labelled rabbit pneumococcus antibody; the radioactivity was found to be predominantly still in the form of labelled protein.

By extracting the disintegrated tissues with the carrier antibody and by measuring the amounts of residual lymph by means of Evans Blue injected before death it was shown that practically all the precipitable radioactive antibody could be accounted for in residual lymph, implying that the remainder of the radioactivity present was in the form of protein which had lost its original specific immunological configuration.

They concluded that transfused antibody entered cells in certain organs which became highly labelled, notably in liver, kidney, spleen, bone marrow, lung and gut, without being broken down to the amino acid level, and was rapidly changed into some other kind of intracellular protein. The level of radioactivity in the plasma free amino acid fraction at death, however, was high enough to be consistent with the idea that the protein radioactivities of other poorly labelled tissues, notably muscle, could be due to incorporation of labelled free amino acids.

Evans Blue uptake may be a convenient guide to plasma protein assimilation by tissues. This dye is found in high concentration in the highly labelled tissues and hardly at all in the poorly labelled ones, supporting the view that the cells of the latter are impervious to proteins.

BENDIXEN, H. J. (1954). **Investigations on the relationship between the serum proteins and the formol-gel in cattle.**—*Nord. VetMed.* **6,** 187-194. [In English. German and Danish summaries. English summary modified.] **3532**

B. examined the correlation between the formol-gel reaction and the relative and absolute concentration of serum proteins in cattle. A close correlation was demonstrated between the amount of γ-globulin and the gelification time.

It can be concluded that a gelification time of less than half an hour corresponds to a γ-globulin concentration of 4·00 g./100 ml. of serum or more. If gelification is complete within the next 4–5 hours, the γ-globulin concentration will be definitely increased, although less markedly. A negative reaction after 24 hours shows that the γ-globulin concentration is at normal level.

In all bovine sera examined, a rise was found only in the γ-globulin fraction.

STÖCKL, W. & ZACHERL, M. K. (1953). Papierelektrophoretische Untersuchungen des Serums von Rind und Pferd. **[Paper-electro-**

phoretic examination of horse and ox serum.] —*Hoppe-Seyl. Z.* **293,** 278-283. **3533**

The authors determined by means of paper chromatography the albumin and globulin fractions of sera, obtained on alternate days for up to 33 days, from each of 13 oxen and 11 horses. They found it difficult to establish mean values, because of marked differences between individuals. They also studied the rise in γ-globulin which followed the injection of varying amounts of an aluminium hydroxide adsorbate vaccine [nature of vaccine not specified].—R.M.

V. ALBERTINI, A. (1954). Bedeutung der Allergielehre für die Pathologie. **[Allergy and pathology.]**—*Schweiz. Z. allg. Path.* **17,** 1-24. [English and French summaries. English summary copied *verbatim.*] **3534**

Allergic reactions are not characterized by any specific histologic picture, although as a group they do present certain special features. The principal manifestation of the anaphylactic type of allergic reactivity is the purely functional hyperactivity of unstriped muscle tissue. In accordance with Doerr allergic reactions are considered as pathogenic antigen-antibody reactions; these are immunologically specific, but the tissue responses which they elicit, such as inflammation, eosinophilia, granuloma formation, etc., are non-specific and normergic, since they can be reproduced in a normal organism by passive sensitization. The inflammatory reactions observed in the allergy of infection are not essentially different from other inflammatory phenomena.

See also absts. **3427** (agglutinating properties of swine erysipelas bacilli); **3434** (protective antigen of *H. pertussis*); **3443** (serological diagnosis of brucellosis); **3448** (pulpy kidney disease); **3463-3465** (bovine contagious pleuropneumonia); **3473** (trichomoniasis); **3490** (rabies); **3491** (fowl pox); **3493** (influenza vaccine); **3498** (ovine enzootic abortion); **3500-3502** (swine fever); **3508** (myxomatosis); **3510-3517** (Newcastle disease;); **3522** (assay of virus haemagglutinins); **3524** (heartwater); **3544** (*Fasciola*); **3549** (echinococcus); **3556** (preparation of helminth antigen); **3563** (anaphylactic shock in horses following injection of *Ascaris* extracts); **3614** (symposium on skin disease); **3670** (International Training Centre on manufacture of veterinary vaccines, Izatnagar, India).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SHANAHAN, G. J. & WRIGHT, P. (1953). **Sheep dipping experiments with arsenic and BHC against the sheep body louse.**—*Agric. Gaz., N. S. W.* **64,** 578, 611-614. **3535**

Using a swim dip, a comparison was made between single treatments of sheep with benzene hexachloride (0·00625% gamma isomer) and arsenic (0·175% and 0·14% As_2O_3 wash). All three treatments appeared to have freed the sheep from lice when the experiments were concluded 2 months later.—M. D. MURRAY.

I. RYAN, A. F. (1954). **The sheep blowfly problem in Tasmania.**—*Aust. vet. J.* **30,** 109-113. **3536**

II. JOHNSTONE, I. L. (1954). **The sheep blowfly problem.**—*Ibid.* 113-115. **3537**

I. R. stated that blowfly strike has only become a problem in Tasmania since 1949. This appears to have coincided with the introduction of *Lucilia cuprina* which has been found associated with breech strike in ewes and lambs. *Calliphora stygia* which was, in the past, the sole agent in blowfly strike, is active throughout the year. *L. sericata* is common but of little importance and a strike caused by *C. erythrocephala* is reported. *Chrysomyia rufifacies* and *Microcalliphora varipes* have not been found in Tasmania.

Two waves of strike occur, in the spring months (September, October and November) and in the autumn (March). Under conditions of heavy rainfall body strike can be common in lambs in midwinter (July, August).

He gave notes on the main features of blowfly strike outbreaks in the various districts of Tasmania.

II. J. briefly discussed current methods of control.—M. D. MURRAY.

ZUMPT, F. & PATERSON, H. E. (1953). **Studies of the family Gasterophilidae, with keys to adults and maggots.**—*J. ent. Soc. S. Afr.* **16,** 59-72. **3538**

The authors gave keys for the classification of species of *Gasterophilus* and *Gyrostigma* found in South Africa.—R.M.

ROBERTS, F. H. S. (1954). **A note on the distribution of the paralysis tick, *Ixodes holocyclus* Neumann, in Victoria.**—*Aust. vet. J.* **30,** 144. **3539**

R. recorded instances of *I. holocyclus* having been found further south in Victoria than previous accounts of its distribution had indicated.—M. D. MURRAY.

LEGG, J. & SHANAHAN, G. J. (1954). **The appearance of an arsenic resistant cattle tick (*Boophilus microplus*) in a small area of New South Wales. Its reaction to some of the newer insecticides.** — *Aust. vet. J.* **30,** 95-99. **3540**

The authors reported the presence of an

arsenic-resistant strain of *B. microplus* in N.S.W. Laboratory tests showed the strain to be strongly resistant to arsenic but susceptible to benzene hexachloride, D.D.T., chlordane (a chlorinated naphthalene derivative), toxaphene (chlorinated terpene), heptachlor (a chlorinated hydrocarbon), dieldrin (a chlorinated naphthalene derivative), aldrin (chlorinated naphthalene) and T.T.C. (chlorocyclohexane trithiocarbonate).—M. D. MURRAY.

WILKINSON, P. R. (1953). **Observations on the sensory physiology and behaviour of larvae of the cattle tick, *Boophilus microplus* (Can) (Ixodidae).** — *Aust. J. Zool.* **1,** 345-356. [Author's summary slightly modified.] **3541**

In larval *B. microplus* the main sense organs which have been recognized are the eyes, Haller's organs, and the palpal organs; the four pairs of sensilla sagittiformia may also have a sensory function.

Larvae were allowed to ascend supports simulating grass stalks and were tested for response to vibration, air currents, interrupted illumination, warm and moist objects, and odours from skin secretions of man and cattle. The strongest questing response was to the odours. Larvae which had been exposed to low humidities collected around and imbibed from drops of water.

The main stimulus governing ascent of the grass blades appeared to be positive phototaxis to moderate light intensities. Larvae sheltered from direct sunlight. Larvae in the field were found to be more exposed in the early morning, often being at the tops of grass stalks. Measurements of light, air temperature, and humidity indicated that light intensity might govern this movement. This suggests that larval sampling in the pasture should take place in the first half of the morning.

In a single series of observations, larvae which had hatched at the base of straws were observed to ascend them in the late afternoon. In a few experiments isolated larvae ascended artificial supports above the reach of a bovine host but groups were always found at heights within reach.

See also abst. **3708** (report, Australia).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

OSBORNE, H. G. (1954). **Liver fluke (*Fasciola hepatica*) infestation in sheep and its seasonal incidence in northern New South Wales.** [Correspondence.] — *Aust. vet. J.* **30,** 152. **3542**

The author pointed out a difference in the seasonal incidence of infestation by *F. hepatica* between the southern (winter rainfall) region and the northern (summer rainfall) region of New South Wales. It appears that in northern N.S.W. the primary factor which determines the occurrence of fascioliasis is the survival time of the cercariae rather than the hatching time of the eggs of *F. hepatica,* and that in consequence, heavy infestations will occur whenever seasonal conditions force sheep to graze mainly in the swampy areas. Shortage of green pasture occurs in the winter months in northern N.S.W. and in summer in southern N.S.W.
—H. McL. GORDON.

VARMA, A. K. (1953). **On *Fasciola indica* n.sp. with some observations on *F. hepatica* and *F. gigantica*.**—*J. Helminth.* **27,** 185-198. **3543**

The author described a new species of liver fluke, *F. indica,* from goats, cattle and buffaloes in Bihar.

The other species are differentiated from it and from each other by the shape of cuticular scales, size of eggs and direction of intestinal branches.—E. J. L. SOULSBY.

URQUHART, G. M., MULLIGAN, W. & JENNINGS, F. W. (1954). **Artificial immunity to *Fasciola hepatica* in rabbits. I. Some studies with protein antigens of *F. hepatica*.**—*J. infect. Dis.* **94,** 126-133. [Authors' summary modified.] **3544**

Serum samples from rabbits infested with *F. hepatica* were found to contain precipitins which reacted with a protein fraction prepared from the adult parasite. Immunization of rabbits with proteins of *F. hepatica* was shown to stimulate the production of these precipitins in relatively large amounts, as measured by quantitative precipitin tests. Immunization of rabbits with these proteins prior to infestation was shown to produce inhibition of development of the parasites, but did not reduce their numbers significantly.

DEIANA, S. (1953). Broncopolmonite da *Schistosoma bovis* (Sonsino 1876) nei ruminanti. (Rilievi anatomo ed istopatologici.) **[Broncho-pneumonia in ruminants caused by *S.***

bovis.]—*Riv. Parassit.* **14,** 181-190. [English summary.] **3545**

In cattle and sheep in Sardinia which were infested with *S. bovis,* D. found eggs in nodules in the lungs and adult parasites in the pulmonary veins. Broncho-pneumonia resulting from secondary infection of these lung lesions was observed. According to D., the finding of *S. bovis* in the lungs of ruminants has not been reported before.—R.M.

Pellegrini, D. (1953). Alcune osservazioni sulla schistosomiasi bovina in Somalia e segnalazione del *Bulinus abyssinicus* nella regione del Basso Giuba. [**Some observations on *Schistosoma* infestation in cattle and the snail host *B. abyssinicus* in Italian Somaliland.**]—*Riv. Parassit.* **14,** 15-17. [English summary.] **3546**

S. bovis was present in the mesenteric veins of 133 out of 327 cattle examined at the Merca abattoir in Italian Somaliland. The parasite was also observed in goats. P. confirmed the existence of *B. abyssinicus,* an intermediate host of *S. bovis,* in the Lower Juba district.—R.M.

Gordon, H. McL., Forsyth, B. A. & Robinson, M. (1954). **Sparganosis in feral pigs in New South Wales.**—*Aust. vet. J.* **30,** 135-138. **3547**

Spargana which were found in a high proportion of feral pigs developed into *Spirometra erinacei* when fed to dogs and cats. Heavy infestations with *S. erinacei* were found in foxes in regions where the feral pigs were present.

The predilection sites in pigs were under the peritoneum of the abdominal wall and diaphragm, but spargana were found in a great variety of sites. Spargana *in situ* in carcasses survived and were infective for dogs and cats after 24 hours at room temperature, and 14 days at 50°C., but were dead after 24 hours at −8°C.

Lachowicz, S. (1953). Przypadek wyleczenia kołowacizny u owcy. [**Surgical treatment of "gid" (*Coenurus cerebralis*) in sheep.**]—*Méd. vét., Varsovie.* **9,** 554. [In Polish.] **3548**

A conventional note.—J. R. Mitchell.

Gentile, G. (1953). Il potere antigene del liquido cistico idatideo nelle cavie. [**Antigenic properties of the fluid contents of echinococcus cysts in g. pigs.**]—*Nuova Vet.* **29,** 69-74; 101-104. **3549**

Specific complement-fixing antibodies were demonstrable in the blood serum of g. pigs by the repeated injection of fluid contents of echinococcus cysts from sheep or cattle; but the Casoni intradermoreaction 15 and 30 days later was negative. Fluid from the cysts therefore appears to have no allergenic properties for g. pigs.—I. Martini.

Chilimoniuk, J. & Pinkiewicz, E. (1953). Obserwacje nad skutecznością działania fioletu goryczki przy Strongyloidesiasis u prosiąt. [**Treatment of *Strongyloides* infestation in piglets with gentian violet.**]—*Méd. vét., Varsovie.* **9,** 455-456. [In Polish.] **3550**

A clinical account of the treatment of 3 severely infested and emaciated piglets, aged from 10 weeks to 3 months and exhibiting advanced nervous symptoms. Drenching with 5 g. gentian violet in 300 ml. water followed by 3 g. after 24 hours was effective and the piglets recovered within a few days.

—J. R. Mitchell.

Semple, A. B., Davies, J. B. M., Kershaw, W. E. & St. Hill, C. A. (1954). **An outbreak of trichinosis in Liverpool in 1953.**—*Brit. med. J.* May 1st, 1002-1006. [Authors' summary modified.] **3551**

An account of an outbreak of trichinosis in the late autumn of 1953 involving 82 persons. The disease was traced to sausages in most cases. In two instances pork roasted at home was responsible. Although a particular carcass of pork was traced as the source, it was impossible to trace this finding back to a piggery, as no records were available. There is an obvious need for such records to be maintained by the Ministry of Food.

Women were affected more often than men (60 to 22). Analysis of the eating habits of 3,412 housewives in Liverpool showed that 16·1% habitually ate raw sausage.

I. Alicata, J. E. & Ricci, M. (1952). Ricerche sulla trichinosi in Italia. [**Trichinosis in Italy.**]—*R. C. Ist. sup. Sanit.* **15,** 36-41. [English, French and German summaries.] **3552**

II. Ricci, M. (1952). La trichinosi in Italia. [**Trichinosis in Italy.**]—*Ibid.* 42-50. [English, French and German summaries.] **3553**

I & II. The authors examined the masseter muscles of 1,500 pigs and the diaphragm of 53 rats, 27 mice and 116 human beings for *Trichinella spiralis,* with negative results. They discussed recorded outbreaks in human beings during the past 35 years, and concluded that *T. spiralis* infestation in Italy is rare.—R.M.

Gould, S. E., Gomberg, H. J. & Bethell, F. H. (1953). **Prevention of trichinosis by gamma irradiation of pork as a public health**

measure.—*Amer. J. publ. Hlth.* **43,** 1550-1557. **3554**

The gamma irradiation of trichinous pork with 18,000 r, using cobalt-60, inhibited maturation of the larvae of *Trichinella spiralis*. This treatment did not affect the flavour of the pork, or induce radio-activity in the meat.

—D. W. Jolly.

Alicata, J. E. (1953). **Control of swine kidney worms.**—*Ext. Circ. agric. Ext. Serv. Univ. Hawaii.* No. 332. pp. 10. **3555**

The application of a combination of sodium pentaborate tetrahydrate and sodium tetraborate pentahydrate to the floor of the piggery was found to destroy the infective larvae of *Stephanurus dentatus* in contaminated pens with concrete floors. The recommended method of control consists of spraying 5 lb. of the compound in 3 gal. of water per 100 sq. feet of contaminated surface.—D. W. Jolly.

Dunn, A. M. (1954). **The preparation of helminth antigen from fresh** *Bunostomum trigonocephalum*. — *J. Helminth.* **28,** 1 - 16. [Abst. from author's summary.] **3556**

D. described the preparation of an antigen from *B. trigonocephalum* and its use in serological studies of nematode infestation in sheep.

Crofton, H. D. (1954). **The vertical migration of infective larvae of strongyloid nematodes.** —*J. Helminth.* **28,** 35-52. [Author's summary modified.] **3557**

Using a technique to reduce the possibility of establishing gradients of temperature, illumination, etc., C. found that infective larvae of *T. retortaeformis*, sheep trichostrongyles and horse trichonemes move in random directions when on a vertical plane at temperatures of 16°–17°C. and at 27°C.

Larvae moving in channels of different widths move different distances along the channels in the same time. In narrow channels the distance moved was approx. proportional to the time (T) of movement. In wide channels the distance was approx. proportional to $\sqrt{T}$.

C. described the effect of a drying water film on the movements of larvae of *T. retortaeformis*.

He concluded that vertical migration of the larvae may be described in terms of normal larval movements without reference to geotropism or undescribed special receptors in the larvae.

Spedding, C. R. W. (1954). **Effect of a subclinical worm-burden on the digestive efficiency of sheep.** — *J. comp. Path.* **64,** 5-14. [Abst. from author's summary.] **3558**

An account of trials in which the digestive efficiency of worm-free lambs was compared with that of their twins which were fed three different dosage levels of infective larvae of *Trichostrongylus axei*. There was a significant depression of the dry-matter digestibility coefficients in the infested groups: the apparent digestibility of crude protein was significantly lowered, the crude fibre fraction being apparently unaffected. There was an 8% depression of appetite. This, with the lowered digestive efficiency of 2% meant that infested animals absorbed 10% less food than worm-free animals.

Gibson, T. E. (1954). **Studies on trichostrongylosis. I. The pathogenesis of** *Trichostrongylus axei* **in sheep maintained on a low plane of nutrition.**—*J. comp. Path.* **64,** 127-140. [Author's conclusions modified.] **3559**

Observations were carried out on the effects of a pure experimental infestation of *T. axei* (dose 4,000 infective larvae daily for 25 days) on six 8-month-old lambs maintained on a hay diet; two similar lambs were kept in similar circumstances as helminth-free controls.

In three of the lambs the infestation proved fatal. The chief symptom was great loss of weight; there was severe oligocythaemia and, just before death, a tendency to neutrophilia. The other three were less severely affected and survived until they were killed for P.M. examination.

Parnell, I. W., Dunn, A. M. & Mackintosh, G. M. (1954). **Some observations on the " spring rise " in worm-egg counts of Halfbred sheep in south-east Scotland.** — *Brit. vet. J.* **110,** 185-193. [Authors' summary slightly modified.] **3560**

Worm-egg counts on Halfbred ewes in South-East Scotland show that the date of parturition has a marked influence on the date of the " spring rise " in worm-egg output. This suggests that anthelmintic treatments should be given based on the date of lambing, and that prelambing treatment of Halfbred ewes may not be justified, except in single cases, or where the flock is losing condition as a whole.

Larvae of *Trichostrongylus* spp. in cultures of faeces from Halfbred ewes were more numerous than those of other genera.

On many farms contamination of pastures in the previous year is probably a greater cause of heavy infestations of *Nematodirus* spp. in Down Cross lambs than infestations caused by contamination of pastures with eggs passed by ewes during winter or spring.

PARNELL, I. W., RAYSKI, C., DUNN, A. M. & MACKINTOSH, G. M. (1954). **A survey of the helminths of Scottish hill sheep.** — *J. Helminth.* **28,** 53-110. [Authors' summary slightly modified.] **3561**

A survey of the helminths of Scottish hill sheep, made by collecting the viscera from over seven hundred sheep which died from disease or accidents on over 80 farms, revealed that worms are the direct or indirect cause of the death of many sheep, and of loss in condition of many more.

Infestations of *H. contortus* increase in incidence and severity in the late spring, but the majority of hill sheep are not infested with it and it is not a serious problem unless lack of herding, bad weather, etc. harm the sheep.

Ostertagia spp. are often the most numerous species found in Scottish hill sheep; their numbers increase considerably for several weeks in the spring and to a less extent and for a shorter time in the autumn. Any prophylactic dosing programmes for lambs, hoggs or adult sheep must include *Ostertagia* spp. in the species against which they are directed.

The numbers of *T. axei* increase in Scottish hill sheep during the winter and for some weeks from March onwards contribute to the pathogenic effect of clinical and subclinical helminthiasis of sheep.

T. vitrinus is more numerous than *T. colubriformis;* together they frequently number thousands, especially for a few weeks in late winter or spring, and again in autumn. *T. vitrinus* is one of the main causes of helminthiasis in late winter and spring in hoggs. Prophylactic dosing programmes for hoggs and older sheep must include control of *Trichostrongylus* spp.

B. trigonocephalum is probably the most pathogenic nematode found in Scottish hill sheep; there is no marked seasonal variation in its numbers, and therefore prophylactic dosing programmes should be timed to eradicate this hookworm before winter and spring; it is most numerous in the South West and on the West Coast of Scotland, but it is prevalent throughout Scottish hill flocks.

O. venulosum increases in numbers in March.

C. ovina is another species whose numbers increase in late winter or early spring, and which must be considered in prophylactic dosing programmes for hoggs and adult hill sheep.

C. curticei, Nematodirus spp., *S. papillosus, C. longipes* and *T. ovis* are probably of less importance in Scottish hill sheep; although, with the exception of *C. longipes,* all infest the majority of Scottish hill sheep at some time during their lives, and *C. curticei* and *Nematodirus* spp. may occasionally be sufficiently numerous to do some damage; *S. papillosus* may sometimes be harmful to housed rams.

In a few sheep *D. filaria* may be sufficiently numerous to be harmful; there is probably a spring increase in its numbers.

The distribution of *F. hepatica* is erratic, depending on the distribution of its intermediate host, *Limnaea truncatula;* the lightest infestations tend to be in the East; on some farms in the South West and West nearly all the ewes may be infested.

GORDON, H. McL. (1953). **The epidemiology of helminthosis in sheep in winter-rainfall regions of Australia. I. Preliminary observations.**—*Aust. vet. J.* **29,** 337-348. **3562**

G. recorded the results of field trials in Tasmania, South Australia and Western Australia. Bioclimatographs, based on mean monthly max. temperatures and mean monthly rainfall, for representative regions in the States concerned were used to explain geographical and seasonal distribution of the nematodes encountered. An attempt was made to define the optimum climatic conditions for these parasites.

Relationships between rainfall and changes in worm burden do not appear to be as clear in winter-rainfall regions as in summer-rainfall regions. It is possible that the dominance of *H. contorlus* in the summer-rainfall regions has some influence on the population of *Trichostrongylus* spp. by cross-immunity reactions. The interaction of immunological phenomena, particularly the influence of early experience of *Trichostrongylus* spp. and nutritional conditions probably play a very important part in determining seasonal changes in worm-burden in the winter-rainfall regions.

The preliminary results were used to decide the times for preventive use of anthelmintics. The author discussed in detail epidemiological factors related to the degree of infestation and interplay between infestations with different worms.

RIVASSEAU, D. & RIVASSEAU, P. (1954). Injection d'extraits d'*Ascaris* et choc anaphylactique, chez le cheval. **[Anaphylactic shock following the injection of extracts of *Ascaris* in the horse.]** — *Rev. Méd. vét.* **105,** 15-17. **3563**

Ascaris extracts injected into the eyelids of sensitized horses produced the general reactions of anaphylactic shock similar to those

induced by histamine. The authors suggested that histamine production may be provoked by the extracts.—D. POYNTER.

HANSEN, M. F., PERSAUD, B. R. B. & ACKERT, J. E. (1954). **Effects of certain anthelmintics and an antibiotic on lumen and tissue phase larvae of *Ascaridia galli* (Schrank).**—*Poult. Sci.* **33,** 140-146. **3564**

The anthelmintics, nicotine, phenothiazine, di-n-butyl tin dilaurate (butynorate) and antimonyl potassium tartrate, administered singly or in combination to chicks, and aureomycin given at two levels to test its possible anthelmintic properties, failed to affect the number or size of the tissue phase larvae of *A. galli*. This observation was based on the number of the tissue phase larvae collected from birds which had been destroyed at intervals after dosage. There was some reduction in the number of larvae in the gut lumen in the anthelmintic treated birds, but not in those treated with aureomycin.—D. W. JOLLY.

RIEDEL, B. B. (1954). **Tryptophane and its relationship to ascarid infections in New Hampshire chicks.** — *Poult. Sci.* **33,** 80-84. **3565**

There was no difference in the number or size of specimens of *Ascaridia galli* harboured by chickens receiving 0·28% or 0·122% tryptophane in their diet. A better weight gain was observed in the birds receiving the higher tryptophane diet.—D. W. JOLLY.

ANDERSON, R. C. (1954). ***Ornithofilaria fallisensis* n. sp. (Nematoda : Filarioidea) from the domestic duck with descriptions of microfilariae in waterfowl.** — *Canad. J. Zool.* **32,** 125-137. [Abst. from author's abst.] **3566**

The author described *O. fallisensis* n. sp. from the domestic duck and four other types of microfilariae from waterfowl.

SPREHN, C. (1953/54). Über einige wirtschaftlich wichtige Helminthen unserer Ziegen, Kaninchen und Meerschweinchen unter besonderer Berücksichtigung ihrer praktischen Bekämpfung. [**Some economically important helminth parasites of goats, rabbits and g. pigs, and their control.**]—*Wiss. Z. Humboldt-Univ., Berlin.* **3,** 85-88. **3567**

In 222 goat herds in Germany, *Ostertagia circumcincta* was the most common, and *Protostrongylus rufescens* was the next most common, helminth parasite. S. described the symptoms and treatment of combined infestation with *Moniezia expansa* and *Avitellina centripunctata,* and infestation with *Trichostrongylus extenuatus*. He noted the occurrence of *Oesophagostomum asperum.*

Of the helminth parasites of rabbits, S. dealt with the treatment of *Graphidium strigosum* infestation with phenothiazine, of *Trichostrongylus retortaeformis* infestation with crystal violet, and of *Cittotaenia ctenoides* infestation with a preparation containing copper sulphate and arsenic.

He recorded the occurrence in g. pigs in Germany of *Paraspidodera uncinata*.—R.M.

See also abst. **3708** (report, Australia).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

COTCHIN, E. (1954). **Further observations on neoplasms in dogs with particular reference to site of origin and malignancy. I. Cutaneous, female genital and alimentary systems. II. Male genital, skeletal, lymphatic and other systems.**—*Brit. vet. J.* **110,** 218-230 & 274-286. **3568**

An account of 1,150 neoplasms from dogs that were examined in the Department of Pathology, Royal Veterinary College, London, during the 4-year period 1950-53, with particular mention of the occurrence of metastases, and their anatomical distribution. The tumours are grouped under the different body systems of origin. In the 422 neoplasms of the skin and subcutis, there were 109 tumours of epithelial origin (51 basal-cell and glandular, 33 hepatoid adenomas, 25 non-glandular), 201 of connective tissue origin (42 fibromas, 20 mast cell tumours, 13 lipomas, 10 angiomas, and 116 sarcomas and sarcoma-like proliferations), 83 melanomas, and 29 miscellaneous tumours. Of the 266 neoplasms of the female genital system, 222 affected the mammary gland: 23 of these were definitely malignant. In the male genital system, 70 of the 77 tumours were in the testis (including 35 tubular adenomas and 25 seminomas). Of the 160 alimentary system tumours, 90 occurred in the mouth (including 35 carcinomas of the tonsil) and 43 in the intestines (including 33 lymphosarcomas). Of the 64 skeletal system tumours, 56 affected the bones (including 15

rib, 11 humerus, 9 radius, 7 femur and 6 tibia tumours). Forty of the 75 neoplasms of the lymphatic system were examples of lymphatic leucosis.

BARANGER, P. & FILER, M. K. (1954). Recherches sur un antagonisme entre le sarcome de Rous et la malaria aviaire. [**Antagonism between Rous sarcoma and plasmodium infection in birds.**]—*C. R. Acad. Sci., Paris.* **238,** 2037-2039. **3569**

Fewer neoplastic lesions and a smaller number of metastases were observed in fowls which were simultaneously infected with Rous sarcoma and *Pl. gallinaceum,* than in fowls infected with Rous sarcoma alone.—R.M.

GOLDHAFT, A. D. (1953). **A registry of bird tumors.**—*Proc. XVth Int. vet. Congr. Stockholm.* 1953. Pt. I. Vol. 2. 1077-1083. [In English. French and German summaries.] **3570**

After some reference to tumours in general, and fowl tumours (especially filtrable tumours) in particular, G. gave an account of a small number of fowl tumours, including examples of fowl leucosis. He mentioned the probable value of a study of fowl tumours. [The location of the registry referred to in the title is not stated, but the author's address is given as Vineland, New Jersey, U.S.A. It is not clear whether the registry is actually in being, or whether it is under the aegis of any particular organization.]—E. COTCHIN.

RILEY, J. F. (1954). **The riddle of the mast cells. A tribute to Paul Ehrlich.** — *Lancet.* **266,** 841-844. **3571**

Paul Ehrlich discovered the mast cell in the blood in chronic myeloid leucaemia in 1879, and described it as a ' well fed cell ' of the connective tissue. Numerous hypotheses have since been advanced concerning its function. Mast cells produce heparin and histamine. It has been suggested that heparin secreted into the tissues becomes hyaluronic acid.

—W. R. BETT.

CONGDON, C. & LORENZ, E. (1954). **Leukemia in guinea-pigs.**—*Amer. J. Path.* **30,** 337-359. [Authors' summary modified.] **3572**

Lymphatic leucaemia occurred in 10 out of 303 adult g. pigs, including 80 untreated controls, used in irradiation studies over 10 years, the incidence being 3·6% in 112 of strain 2, 6·7% in 30 of strain 13, and 2·5% in 161 heterologous hybrids.

X-irradiation and gamma irradiation have not been established as leucaemogenic agents for the g. pig. In 6 g. pigs leucaemia appeared suddenly without evidence of preceding alterations of the peripheral leucocyte count. In 2 animals the peripheral leucocyte count was altered for prolonged periods before the appearance of leucaemia. At necropsy the 10 animals with primary lymphatic leucaemia were remarkably alike. Several animals showed localization of leucaemia cells at old inflammatory sites in the lungs, kidneys and urinary bladder. Transplantation of leucaemic tissue was accomplished for 4 of the primary cases. It was attempted only in inbred strains and all the inoculated animals died from leucaemia. The different transplant lines showed variation in the duration of the disease and degree of local tumour formation.

See also absts. **3614** (symposium on skin diseases); **3720** (book, cancer research).

NUTRITIONAL AND METABOLIC DISORDERS

MORRIS, M. L. (1954). **Some physiological considerations in rumen digestion.**—*Vet. Med.* **49,** 21-22. **3573**

In ruminants when normal digestion is disturbed as a result of mismanagement, malnutrition or injudicious treatment, acid fermentation develops in the rumen owing to the cessation of the alkaline saliva flow, and the normal population of rumen micro-organisms, the growth and metabolism of which are essential for the nutrition of the animal, is rapidly reduced and acid-forming bacteria begin to grow. M. discussed the treatment of this condition; he mentioned a powdered synthetic medium (" profloran ") [*V.B.* **24,** 2838] which has been claimed to enhance the growth and activity of rumen microflora.—A. ACKROYD.

SLINGER, S. J., HAUSER, M. M. & PEPPER, W. F. (1954). **The correlation between feed consumption and fecal flora in chicks.** — *J. Nutr.* **52,** 75-88. [Authors' summary modified.] **3574**

Penicillin caused a significant increase in weight with chicks having free access to feed, but no increase when feed intake was equated. With chicks fed *ad libitum* with penicillin supplements, there was greater daily feed consumption per chick almost without exception for the first 28 days after hatching. On the other

hand, feed consumption per unit of body weight was increased by the antibiotic only to about 16 days of age. These results suggest that penicillin stimulates chick growth by causing an increase in feed consumption early in the life of the bird.

The real increase in feed consumption—that is, the increase per unit of body weight—caused by penicillin appeared to be associated with an increase in faecal coliform organisms or a decrease in faecal counts of lactobacilli, anaerobes, aerobes and enterococci, or with both these factors.

FISHER, H., SCOTT, H. M. & HANSEN, R. G. (1954). **Further studies on the alfalfa factor and its relation to the liver and whey factors.** —*J. Nutr.* **52,** 13-24. [Authors' summary copied *verbatim*.] **3575**

A factorial design was employed in two experiments with chicks depleted and non-depleted in animal protein and alfalfa meal to test the response to unidentified growth factors present in alfalfa meal, defatted whole liver and dried whey. The data suggest that each of the three supplements contributes separate and distinct factors which are additive in their action. Alfalfa meal gave the greatest and most consistent response of the supplements tested. It was shown that the growth response from alfalfa meal could not be explained on the basis of its content of ash, critical amino acids or glucuronic acid. The results obtained from adding 5% cellulose to the basal diet were inconclusive. Growth inhibition resulting from 40% alfalfa meal cannot be explained solely on the basis that alfalfa contains a toxic factor.

NICHOLS, R. E. (1954). **Why do cows and sheep bloat?**—*Vet. Med.* **49,** 91-95. **3576**

A speculative article. The ingestion of legumes is associated with lowered buoyancy of rumen juice. This causes ingesta to sink and increases the level of rumen fluid to above the cardia, forming a mechanical barrier to belching. The sporadic occurrence of bloat may be related to variation in plant density at different stages of growth.—C. C. BANNATYNE.

SMITH, C. K., BRUNNER, J. R., HUFFMAN, C. F. & DUNCAN, C. W. (1953). **Experimental production of frothy bloat in cattle.**—*J. Anim. Sci.* **12,** 932. [Only abst. given. Abst. from abst.] **3577**

A ration consisting of maize, soya bean oil meal, dicalcium phosphate, sodium chloride, calcium carbonate, vitamins A and D, and hay containing brome grass and lucerne produced frothy bloat in fistulated and intact dairy cattle. The bloat varied from mild to severe on different days. Severe bloat was evidenced by distress and refusal of food. The severe cases usually occurred before feeding in the morning. Methyl silicone and lipase treated cream were effective in reducing the froth. The appearance of an iodophilic streptococcus is concurrent with the frothing.

SQUIBB, R. L., GUZMAN, M. A. & SCRIMSHAW, N. S. (1954). **Effect of high environmental temperatures on metabolism. I. Growth and blood constituents of rats exposed to 94°F. for 72 hours.** — *J. Nutr.* **52,** 155 - 163. [Authors' summary modified.] **3578**

Rats were subjected to a temp. of 94°F. for 72 hours and were then compared with control rats kept at 72°F. In one set of trials they were fed *ad libitum*; in another they were restricted to 5 g. of food.

With *ad libitum* feeding, heat-treated rats consumed less food than control rats. They lost weight, and the levels of riboflavin, vitamin A, ascorbic acid and alkaline phosphatase in the blood serum were significantly depressed, whereas the levels of total protein were significantly elevated.

With restricted feeding, both control and heat-treated rats lost weight, and in the latter group only the vitamin A and ascorbic acid levels were significantly depressed. The exposure to high temp. had no effect on total carotenoid levels in either the *ad libitum* or the restricted groups.

BURNSIDE, J. E., GRUMMER, R. H., PHILLIPS, P. H. & BOHSTEDT, G. (1953). **The effect of intermittent administration of aureomycin to growing-fattening swine.**—*J. Anim. Sci.* **12,** 828-835. [Authors' summary modified.] **3579**

Twenty milligrams of crystalline aureomycin per kg. of ration when fed continuously during the growing-fattening period controlled a natural outbreak of dysentery among pigs and significantly reduced the deaths due to this disease.

The same level of aureomycin supplementation at 3- and 10-day intervals was less effective in controlling the early deleterious influence of the dysentery.

Death losses were lower in the lots receiving antibiotic during the early period of the trial than in those receiving the supplement during the middle and late periods. However, the over-all average rates of daily gain were not significantly different.

Withdrawal of the antibiotic from the ration during the middle or latter part of the feeding caused a concomitant decrease in rate of gain.

MONSON, W. J., HARPER, A. E., WINJE, M. E., ELVEHJEM, C. A., RHODES, R. A. & SARLES, W. B. (1954). **A mechanism of the vitamin-sparing effect of antibiotics.** — *J. Nutr.* **52,** 627-636. [Authors' summary modified.] **3580**

The growth of chicks fed synthetic diets containing limiting amounts of folic acid was increased by supplementing the diets with antibiotics. This increase in growth was accompanied by the appearance of one or more species of coliform organisms in the ileum and duodenum contents that produced increased amounts of extracellular folic acid. This change was apparent in two days in the ileum contents of 4-week-old chicks. It was also observed that the increased folic acid production was correlated with increased liver folic acid, but there was no change in the concentration of intestinal folic acid. These results explain at least in part the mechanism by which antibiotics spare vitamins for the chick.

CARPENTER, L. E. & LARSON, N. (1953). **Antibiotics and the reproduction of swine.**—*J. Anim. Sci.* **12,** 812-818. [Authors' summary modified.] **3581**

Feeding aureomycin to pigs from weaning through two gestation and lactation periods did not have a harmful or beneficial effect on reproduction.

Neither aureomycin nor penicillin was observed to be transferred across the placental tissues of the sow.

Aureomycin can be detected in the milk of sows given the antibiotic orally but the amount is small and variable, and does not influence the growth rates of unweaned piglets.

HANSEN, A. E., SINCLAIR, J. G. & WIESE, H. F. (1954). **Sequence of histologic changes in skin of dogs in relation to dietary fat.**—*J. Nutr.* **52,** 541-554. [Authors' summary modified.] **3582**

Periodic histological examinations of the skin were made on 8 young puppies, 4 of which were developing deficiency symptoms due to lack of dietary fat, and on 4 adult dogs, three of which were recovering from the fat-deficient state after the addition of fat to the diet.

Rather remarkable was the uniformity of the changing microscopic appearance of the skin both during increasing deficiency states and during recovery. Alterations in the stratum corneum, collagen structure, cellular infiltrate of the dermis, hair follicles, sebaceous glands and sudoriparous glands, were all related to changes in the epidermis, particularly with regard to the number of cell layers. More rapid restoration of the microscopic structure occurred when the dietary fat was high in unsaturated fatty acid content.

The findings suggest that dietary fat supplies a factor necessary for the maturation of epithelial, sebaceous and sudoriparous cells, and that the absence of this factor from the diet results in distinct abnormality in the skin demonstrable both microscopically and grossly. The process is readily reversible and changes in an orderly fashion when fat is added to the diet.

NARAYANA RAO, M. (1954). **Nutritive value of buffalo-butter fat.**—*Indian J. med. Res.* **42,** 29-36. [Author's summary modified.] **3583**

Three glyceride fractions separated from buffalo-butter fat by precipitation from a solvent were fed to young rats (one-month old) and the gain in weight determined.

The glyceride fraction III or the 0°C. filtrate was superior to the other two fractions in inducing growth of the rats. The results show that the total unsaturation of the fat may be a factor contributing to differences in growth.

There were no significant differences in the lipoid composition of the liver of rats fed on the different diets. The amount of vitamin A stored in the liver of rats fed on glyceride fraction III was greater than that in the liver of rats fed on other glyceride fractions.

DE GIROLAMO, A. (1952). Ricerche spettrofotometriche sul grasso di bufalo. **[Spectrophotometric examination of buffalo's fat.]**—*Boll. Soc. ital. Biol. sper.* **28,** 443-445. **3584**

G. made a spectrophotometric examination of body fat obtained from buffaloes after slaughter. The results differed from those obtained with fat from cattle, in that there were no absorption bands for visible light and there was marked absorption of ultra-violet light.

—R.M.

CASON, J. L., RUBY, E. S. & STALLCUP, O. T. (1954). **The influence of the ash content of the rumen ingesta on the hydrogen ion concentration in the bovine rumen.**—*J. Nutr.* **52,** 457-465. [Authors' summary modified.] **3585**

An account of a study in two fistulated steers, to determine the apparent correlation between the pH of the rumen and the fat, fatty acid and ash content of the ingesta from Korean lespedeza, Sericea lespedeza, and prairie

hays at given intervals during rumen digestion.

A significant positive correlation was found to exist between the ash content of the ingesta and the pH of the rumen. This relationship appears to be due to the buffering capacity of the ash which, together with the buffering action of the saliva, tends to keep the pH of the rumen contents within rather narrow limits.

I. Spencer, A. G., Ross, E. J. & Lloyd-Thomas, H. G. L. (1954). **Cation exchange in the gastro-intestinal tract.**—*Brit. med. J.* March 13th, 603-606. [Authors' summary modified.] **3586**

II. Spencer, A. G. & Lloyd-Thomas, H. G. L. (1954). **A critical analysis of cation-exchange therapy.** — *Ibid.* 597-602. [Abst. from authors' summary.] **3587**

I. The net uptake of cations by an exchange resin was determined at different levels of the intestinal tract in man. The rates of turnover of Na^{24} and K^{42} to and from the resin were also measured in the small and large intestines of the rat.

A series of dynamic equilibria are established between the cations on the exchange resin and those in the intestinal fluids. These transfers are continuous throughout the gut, but the rates of turnover and the net uptake of cations by the resin change as it passes onwards from the stomach to the rectum. Cations throughout the body continually exchange with those on the resin by way of the intestinal fluids.

These concepts were used to interpret the results obtained during the treatment of patients with cation-exchange resins [see II *infra*].

II. Cation-exchange resins were administered *per os* to 39 human patients with chronic oedema resulting from cardiac or renal disease.

A satisfactory response was obtained in 21 of the 32 with gross oedema. Minor complaints induced by resin therapy occurred in 26 cases, but serious chemical disorders were uncommon.

Metabolic balance data were obtained in 12 patients and the authors discussed the results and analysed them in relation to the incidence of biochemical complications and to the clinical effectiveness of the therapy.

They made recommendations on the use of such resins, with particular reference to the selection and management of patients and the methods by which dangerous complications can be avoided.

Riggs, J. K., Colby, R. W. & Sells, L. V. (1953). **The effect of self-feeding salt-cottonseed meal mixtures to beef cows.**—*J. Anim. Sci.* **12,** 379-393. [Authors' summary modified.] **3588**

The authors reported the results of two experiments in which mixtures of cotton-seed meal and salt were self-fed to beef cows.

Salt may be used to limit the consumption of concentrates from self-fed mixtures. No ill effects from the use of these mixtures were observed when cows were allowed to become gradually adjusted to the high salt intake and were given access to an abundant supply of water at all times.

No significant difference in blood chlorides was observed between cows fed high levels of salt as compared to cows receiving only a normal salt intake. No differences in blood chlorides were observed between the beginning and end of the experiment when all groups were considered; however, there was a significant difference between blood chloride levels at the beginning and end of the experiment for cows self-fed a mixture of salt and cotton-seed meal with a low intake of hay.

There appeared to be no real difference in chlorides found in the colostrum or normal milk either between treatments or between stages of lactation.

Cows fed a high salt allowance consumed considerably more water and excreted a much greater volume of urine than cows receiving only a normal salt allowance; the total chloride excretion of the former group was 11·5 times that of the controls and 98·3% of the total excreted was in the urine. Histological studies revealed no kidney damage.

Data from a digestion trial indicate a beneficial effect of high salt intake upon digestibility of all the nutrients, particularly protein, crude fibre and nitrogen-free extract, with a less significant effect on ether extract digestion. Further investigation is needed.

High salt intake appeared to have no detrimental effect upon reproductive performance of the cows.

Garrigus, U. S., Kammlade, W. G., Boley, L. E. & Hardenbrook, H., Jr. (1953). **A study of elemental sulfur and of some other suggested preventives of enterotoxemia in a lamb fattening ration.**—*J. Anim. Sci.* **12,** 474-479. [Abst. from authors' summary.] **3589**

An account of two experiments with groups of lambs fed fattening rations normally used in the Corn Belt (maize-growing area) of the U.S.A., varied by additions of elemental sulphur, bicarbonate of soda or extra maize-cobs, by increased concentrate to roughage ratio and

by vaccination. It was concluded that:—

Elemental sulphur added to a ration of maize silage, maize, soya bean oil meal, and powdered limestone did not reduce efficiency of feed utilization as judged by gain in weight when an equal ration was fed, and apparently did not completely eliminate losses from enterotoxaemia.

Elemental sulphur added to a ration of maize silage, maize-and-corn-cob meal, soya bean oil meal, and powdered limestone increased the efficiency of feed utilization as judged by gain in weight when an equal ration was fed.

Lambs vaccinated with 5 ml. of a killed culture of *Clostridium welchii* Type D to prevent enterotoxaemia made as good gains in weight as did unvaccinated controls.

No significant effect on gain was obtained from the addition of sodium bicarbonate or extra maize cob to a ration of maize silage, maize-and-cob meal, soya bean oil meal, limestone, and iodized salt.

MACHLIN, L. J., PEARSON, P. B., DENTON, C. A. & BIRD, H. R. (1953). **The utilization of sulfate sulfur by the laying hen and its incorporation into cystine.**—*J. biol. Chem.* **205,** 213-219. **3590**

After injection of S_{35} into laying hens (Rhode Island Red) radio-activity appeared in the egg yolks and albumen. Analysis revealed that S_{35} was present in sulphate and cystine but not in methionine.—P. H. HERBERT.

BROOKSBANK, N. H. (1954). **Anaemia in piglets associated with a copper deficiency.**—*Vet. Rec.* **66,** 322-324. [Authors' summary copied *verbatim*.] **3591**

A hypochromic anaemia accompanied by a neutropenia was observed in a litter of piglets on a farm where the use of iron therapy failed to prevent anaemia from developing. The administration of copper to the piglets rapidly corrected the hypochromic anaemia.

GILLIS, M. B., NORRIS, L. C. & HEUSER, G. F. (1954). **Studies on the biological value of inorganic phosphates.**—*J. Nutr.* **52,** 115-125. [Authors' summary slightly modified.] **3592**

The authors described a method for comparing the availability to chicks of phosphorus from different sources. It involves feeding graded increments of the phosphates in a diet very deficient in phosphorus and determining the resulting increases in bone ash after 4 weeks. For studying compounds of moderate or high availability, a purified type of diet very low in phosphorus was used. For studying poorly available compounds, a diet with satisfactorily low phosphorus content was formulated from ingredients of a practical type.

Pure beta-tricalcium phosphate was used in all experiments as a standard of comparison and arbitrarily assigned a biological value of 100.

The chemically pure orthophosphates, mono-, di-, and tri-calcium phosphate, sodium acid phosphate and potassium acid phosphate, were highly available. The acid salts, monocalcium phosphate and potassium acid phosphate, were better utilized than the other pure orthophosphates.

Feed grade materials of excellent availability were average samples of dicalcium phosphate, defluorinated phosphate and domestic steamed bone meal. Other bone products of slightly lower availability were spent bone char, bone ash and imported bone meal of unknown history.

None of the pyrophosphates or metaphosphates were satisfactory, although significant amounts of phosphorus were utilized from calcium acid pyrophosphate and vitreous metaphosphate.

Among the untreated rock products, only Curaçao Island phosphate showed a satisfactory degree of availability. Florida land pebble phosphate was appreciably better utilized than brown phosphate rock from Tennessee.

Waste pond phosphate, the "colloidal" phosphate of commerce, was studied in the purified type of diet and also the practical type of basal ration. Excessive mortality occurred with the purified diet containing colloidal phosphate. In the practical diet, colloidal phosphate was approx. 25% as effective as an equivalent amount of phosphorus from beta-tricalcium phosphate in increasing the ash content of bones. However, it had no significant beneficial effect on growth.

LINDLEY, C. E., TAYSOM, E. D., HAM, W. E. & SCHNEIDER, B. H. (1953). **Urinary calculi in sheep.** — *J. Anim. Sci.* **12,** 704 - 714. [Authors' summary modified.] **3593**

The authors gave data on the effect of high intake of $CaCO_3$, $MgCO_3$ and K_2HPO_4, on the blood and urine contents of calcium, phosphorus, magnesium, urine pH, urine total solids, urine volume and their possible relation to the formation of urinary calculi in sheep. Supplementation with K_2HPO_4 appeared to cause the highest incidence of calculi. A vitamin A- or carotene-free diet does not seem to be involved in the formation of calculi. Animals passing urine with the lowest total solids had

the highest incidence of calculi, suggesting that phosphorus supplementation had tied up other minerals as insoluble phosphates. In the lots where there was a high incidence of calculi, the rams had an increased rate of water consumption and an increased rate of urine excretion.

THOMAS, O. O., GALLUP, W. D. & WHITEHAIR, C. K. (1953). **Effect of phosphorus deficiency on metabolism of carotene and vitamin A by beef cows.** — *J. Anim. Sci.* **12,** 372-378. [Authors' summary slightly modified.] **3594**

Nine pregnant Hereford cows, after a preliminary period of low-phosphorus intake, were used to study the effect of phosphorus deficiency on carotene metabolism. For an average period of 8 weeks before calving and 8 weeks or longer thereafter, four of the cows were continued on the low-phosphorus ration and five were given a phosphorus supplement. All of the cows received equal but limited amounts of carotene supplied by prairie hay. Determinations were made of the phosphorus content of the plasma and the carotene and vitamin A content of the plasma, liver, and milk of the cows at regular intervals.

Average plasma-carotene levels were generally higher in the phosphorus-deficient cows than in those fed adequate phosphorus; these differences approached statistical significance (5% level). Plasma-vitamin A levels appeared to be unaffected by phosphorus deficiency. At 8 weeks after calving both groups of cows had lost similar amounts of carotene and vitamin A from the liver. Milk from the phosphorus-deficient cows contained more carotene but less vitamin A than that from the cows fed adequate phosphorus.

GALLUP, W. D., THOMAS, O. O., ROSS, O. B. & WHITEHAIR, C. K. (1953). **Carotene and vitamin A metabolism in cattle and sheep on phosphorus-deficient rations.**—*J. Anim. Sci.* **12,** 715-721. **3595**

After depletion of phosphorus and vitamin A, yearling Hereford steers showed higher blood carotene and lower liver vitamin A levels than did animals given supplementary phosphorus. In a similar experiment with lambs, findings tended in the opposite direction. The authors postulated a species difference.

—P. H. HERBERT.

SLINGER, S. J., PEPPER, W. F. & MOTZOK, I. (1954). **Interrelationship between vitamin E and phosphorus in preventing perosis in turkeys.** — *J. Nutr.* **52,** 395-403. [Authors' summary modified.] **3596**

Groups of turkeys were fed mashes containing all combinations of 0·3, 0·5 and 0·7% inorganic phosphorus and 0, 2·5, 5·0 and 7·5 I.U. of vitamin E per lb. from hatching to 24 weeks of age. Grain was fed with the mash for the 8- to 24-week period.

Based upon the growth data, there appeared to be little or no interrelationship between vitamin E and phosphorus. Levels of 0·5% inorganic phosphorus and 2·5 I.U. of vitamin E per lb. of feed appeared adequate for optimum growth but were not sufficient for prevention of perosis.

Both vitamin E and phosphorus aided in reducing the incidence and severity of perosis, complete prevention being achieved when the diets contained 0·7% inorganic phosphorus and 5·0 I.U. of supplementary vitamin E per lb. of feed.

LAMMING, G. E., SALISBURY, G. W., HAYS, R. L. & KENDALL, K. A. (1954). **The effect of incipient vitamin A deficiency on reproduction in the rabbit. I. Decidua, ova and fertilization.**—*J. Nutr.* **52,** 217-225. [Authors' summary modified.] **3597**

LAMMING, G. E., SALISBURY, G. W., HAYS, R. L. & KENDALL, K. A. (1954). **The effect of incipient vitamin A deficiency on reproduction in the rabbit. II. Embryonic and fetal development.** — *Ibid.* 227-240. [Abst. from authors' summary.] **3598**

I. In a study to determine the effect of incipient vitamin A deficiency, *i.e.*, the deficiency before visible symptoms occur, on the early stages of reproduction in the female rabbit, the vitamin A deficiency did not reduce decidua formation after the insertion of a thread into the uterus in mated females. It did, however, produce premature degeneration of ova and reduced the number of fertilized ova at 40 hours and at 4 days *post coitum*.

II. The authors studied various stages of gestation in mature female rabbits to determine the effect of low levels of vitamin A on the reproductive efficiency of rabbits even though they appear healthy.

Incipient vitamin A deficiency reduced by 14% the number of rabbits which mated normally; reduced by 18% the total number of deficient animals which conceived, as compared with the conception rate in control groups receiving adequate vitamin A; it did not, however, reduce the average number of corpora lutea in pregnant animals at autopsy. In the group with incipient deficiency, ovum infertility

and degeneration resulted in a loss of ova before implantation; the litter size was found to be significantly reduced in deficient animals killed and examined 16 days *post coitum*.

A syndrome of resorption and abortion occurred during late gestation; this reduced the number of normal foetuses present per rabbit at 28 days *post coitum*. It was estimated that only 26·4% of the original ovulations resulted in normal foetuses in deficient rabbits 28 days *post coitum*, compared to 74·6% in controls. Ocular abnormalities occurred in foetuses from deficient rabbits, as well as changes in the foetal placentae giving a mottled appearance suggestive of a decreased vascularity.

Impaired embryonic and foetal nutrition in deficient rabbits significantly reduced foetus size at 16 and at 28 days *post coitum*, even though the dams appeared in good health.

SHARMAN, G. A. M. (1954). **Muscular dystrophy of beef calves in the north of Scotland.**—*Vet. Rec.* **66,** 275-279. [Author's summary modified.] **3599**

It has been established that a disease of unweaned beef calves, which occurs in the north of Scotland when housed cattle are first put to grass in early summer, is muscular dystrophy. S. pointed out the resemblance of this disease to the description of " hairball " in the 1947 N.V.M.A. handbook of calf diseases and to descriptions of experimental muscular dystrophy in calves.

Many sudden deaths occurring in unweaned beef calves in spring and early summer have been shown to be due to dystrophic lesions of heart muscle. Unusual symptoms presented by some of the calves were sweating and difficulty in swallowing.

The disease can be prevented by ensuring that pregnant cows receive adequate quantities of vitamin E by mouth. It may also be prevented by dosing calves from birth with vitamin E, and S. made suggestions on how feeding may prevent the disease. Treatment of early cases with vitamin E is effective.

Some field cases of muscular dystrophy induced by feeding cod-liver oil have been encountered.

MILLER, E. R., JOHNSTON, R. L., HOEFER, J. A. & LUECKE, R. W. (1954). **The riboflavin requirement of the baby pig.**—*J. Nutr.* **52,** 405 - 413. [Authors' summary modified.] **3600**

Nineteen baby pigs were used in an experiment to determine the riboflavin requirement. Following a depletion-adjustment period on a riboflavin-free, synthetic milk diet, the pigs were individually fed diets containing 0, 1, 2, 3 and 4 mg. of riboflavin per kg. of solids. The feeding method was essentially *ad libitum*.

Data on individual growth response and dietary intake were recorded. Analysis of the data indicates that the riboflavin requirement of the baby pig for optimum growth and feed efficiency is approx. 3·0 mg. per kg. of solids. External, gross and microscopic lesions were present only in those animals receiving less than 2·0 mg. of riboflavin per kg. of solids. Deficiency symptoms could be alleviated by riboflavin supplementation.

WAIBEL, P. E., CRAVENS, W. W., BIRD, H. R. & BAUMANN, C. A. (1954). **Rhythmic responses of chicks to injected thiamine.**—*J. Nutr.* **52,** 65-73. [Authors' summary modified.] **3601**

The growth of chicks fed diets containing sub-optimal or adequate amounts of thiamine took place mainly during the day, even though the laboratory was illuminated continuously. When sub-optimal amounts of thiamine were injected, chick weight increased rapidly for a few hours, followed by a decline in weight. The duration and intensity of the " growth " phase varied with dosage, and was sufficient to overcome and to reverse the normal diurnal rhythm. Total growth varied with the frequency of injection; thiamine injected every second day was utilized less effectively than that injected daily or twice a day. Large injections were relatively wasteful.

REID, M. E. & BRIGGS, G. M. (1954). **Nutritional studies with the guinea pig.**—*J. Nutr.* **52,** 507 - 517. [Authors' summary modified.] **3602**

Young g. pigs, supplied with a " synthetic " diet lacking pantothenic acid, developed deficiency symptoms characterized by a decrease in the rate of growth, followed by a loss of weight, roughening of the coat, a tendency to diarrhoea, anorexia, weakness, inactivity and eventual death. The internal symptoms were a decrease in fat deposition, with hyperaemia, enlargement, and, in some cases, haemorrhages of the adrenal glands. The rate of onset of the deficiency was found to be related to the age and weight at which the animals were placed on the diet. Preliminary studies indicated no clear evidence of a disturbance of the blood picture in the early and mid-stage of the deficiency.

The young g. pig's requirement of pantothenic acid appears to be between 15 and 20 mg.

per kg. of diet. In older animals the requirement appears to be less. Unlike the rat, no benefit appeared to be derived from the presence of large amounts of ascorbic acid in the deficient diet.

KENAWY, M. R., EL-MOHANDIS, M. M. E.-N., ROHAYEM, H. K. E.-D. & EL-SHECHY, A.-W. (1952). **Studies on the diuretic action of vitamin C in normal animals and human beings, and its clinical value in pathological retention of water.**—*Int. Z. Vitaminforsch.* **24,** 40-61. [In English. French and German summaries.] **3603**

From experiments on the i/v administration of 150–500 mg. vitamin C to dogs, the authors concluded that the vitamin acted directly on the kidneys, producing diuresis by increasing glomerular filtration. They gave case reports on the treatment of normal and oedematous human beings with vitamin C.—R.M.

NIELSEN, S. W. & MCSHERRY, B. J. (1954). **Renal hyperparathyroidism (rubber jaw syndrome) in a dog.**—*J. Amer. vet. med. Ass.* **124,** 270-274. [Authors' summary modified.] **3604**

An account of severe, chronic interstitial nephritis in a dog, resulting in uraemia, acidosis, and hyperphosphataemia. Owing to the renal retention of the phosphorus, a compensatory hyperplasia of the parathyroid gland occurred, resulting in demineralization with osteodystrophia fibrosa of the jaw bones, and metastatic calcification in various organs.

ALLCROFT, R., SCARNELL, J. & HIGNETT, S. L. (1954). **A preliminary report on hypothyroidism in cattle and its possible relationship with reproductive disorders.**—*Vet. Rec.* **66,** 367-371. [Authors' summary modified.] **3605**

The authors demonstrated hypothyroidism, as evidenced by low plasma protein-bound iodine values, in cattle in Great Britain; values for 20 Friesian cattle from two control herds ranged from 2·4 to 3·2 μg. iodine per 100 ml. plasma, while those for seven Friesian cows from an affected herd ranged from 0·8 to 1·6 μg. Similarly, values ranging from 3·2 to 4·0 μg. iodine per 100 ml. plasma were obtained for 23 Guernseys from two control herds and values for 23 Guernseys from two affected herds were 1·6 to 3·2 μg. It was found that there was a definite breed difference regarding plasma protein-bound iodine levels in the three breeds so far studied, Guernseys being higher than Ayrshires, which were in turn higher than Friesians.

They described the foetal thyroid histology associated with the thyroid condition. Three of the cases showed evidence of stimulation which in two was partially masked by P.M. change. The thyroid of a fourth case was completely disrupted by P.M. change, and a fifth showed changes interpreted as representing commencing recovery.

The low plasma protein-bound iodine values and the histological changes in the foetal thyroids were associated with a high herd incidence of aborted, stillborn and weakly calves.

KRAHL, M. E. & BORNSTEIN, J. (1954). **Inhibition of glucose use in muscle extracts by lipoproteins.** [Correspondence.]—*Nature, Lond.* **173,** 949-950. [Abst. from authors' summary.] **3606**

Lipoproteins from diabetic plasma, anterior pituitary, liver and muscle inhibited glucose utilization by muscle extracts and in a limited number of experiments insulin reversed this inhibition.

NASH, J., LISTER, J. & VOBES, D. H. (1954). **Clinical tests for ketonuria.** — *Lancet.* **266,** 801-804. [Authors' summary modified.] **3607**

The authors compared the sensitivities of the Rothera, Gerhardt, and nitroprusside-tablet methods for detecting urinary ketones and discussed their suitability for clinical use.

The earlier tests have several disadvantages, such as the absence of a standardized technique, and the large amount of time involved when the tests are correctly made.

The need for a simple and quick clinical method for detecting urinary ketone bodies is largely met by the introduction of the nitroprusside tablet.

They gave details of the quantitative levels of the individual ketone bodies in the urine of patients in different degrees of ketosis.

SAMPSON, J. (1954). **Blood sugar and liver glycogen in ketosis of the ruminant.** — *J. Amer. vet. med. Ass.* **124,** 341-343. **3608**

In ruminants if the liver glycogen and blood sugar levels can be maintained within normal limits, ketosis of clinical magnitude will not occur. Prevention of clinical ketosis in the ruminant seems to depend primarily upon a good appetite and adequate rations, whilst therapeutic measures for ketosis are successful only if they produce and maintain high liver glycogen and blood sugar levels. The simplest therapeutic measure is a slow intravenous infusion of glucose and high cure rates have been reported following 2–3 infusions of 4–500 ml. of 40–50% glucose supplemented by

oral sugar or molasses. Although A.C.T.H. and cortisone will relieve some of the symptoms of ketosis, i/v glucose should also be given as there is no endocrine dysfunction in the pathogenesis of the condition. Sodium propionate, ¼–½ lb. orally daily for 10 days, has been found to be effective in the treatment of ketosis and appears to be a promising line of treatment.

—A. Ackroyd.

Tarlatzis, K. V. (1951). **[Contribution to the study of ketosis in milch cows.]** — *Thesis, Athens.* pp. 68. [In Greek.] [Abstract from author's French summary.] **3609**

T. described ketosis amongst imported cows and improved indigenous breeds in Greece. He observed that the condition was more common when the ratio of fats to carbohydrates in the ration was low (1:4–1:5) than when the ratio was high (1:10–1:12), and that the incidence of ketosis could be reduced by reducing this ratio. He discussed the importance of ketosis in relation to meat inspection.—R.M.

Miller, W. J., Tyznik, W. J., Allen, N. N. & Sorensen, D. K. (1954). **The treatment of ketosis in dairy cows by oral administration of sodium acetate.**—*J. Amer. vet. med. Ass.* **124,** 291-294. [Authors' summary modified.] **3610**

Sodium acetate was fed at rates varying from ¼ to 1 lb. daily to 34 cows showing signs of ketosis. Blood sugar and ketones and, in most cases, urine ketones were determined.

Eighteen recovered with no other treatment, 6 were confused by complicating factors, incomplete information, or by other treatment given simultaneously, and 10 failed to respond. Of the latter, 8 also failed to respond to intravenous glucose treatment, and 2 of the 8 to sodium propionate feeding. Only one of the 10 responded to glucose therapy.

Fifteen other cows from which blood samples were not analyzed made satisfactory recoveries from clinical signs following sodium acetate as the sole treatment.

Lecomte, M. (1954). Traitement des cétoses. **[Treatment of ketosis in cows with methionine.]**—*Bull. Acad. Vét. Fr.* **27,** 75-77. **3611**

Ketosis in milking cows was observed to follow digestive disturbances which the farmer had treated by starvation. Associated hypocalcaemia was sometimes noted. A single i/v injection of acetyl-methionine (10 g.) with calcium chloride when indicated, usually produced rapid and final recovery. Occasional relapses responded to a second injection.

—P. H. Herbert.

See also abstr. **3648** (action of vitamin E on the mammary gland); **3708** (report, Australia); **3711** (book, protein metabolism); **3723** (book, silage fermentation).

DISEASES, GENERAL

Hay, J. R. (1954). **Ohio's animal disease reporting program.** — *Proc. 57th Ann. Meet. U.S. live Stk sanit. Ass.* 1953. pp. 213-225. **3612**

H. described a system organized by the Ohio Division of Animal Health for obtaining information on the incidence of the principal diseases of domestic animals in Ohio. For this purpose the state was divided into 23 areas, each having a supervisor who regularly sent out cards bearing a list of 15 diseases to the practising veterinary surgeons in his area. The practitioners, 600 (52%) of whom agreed to participate in the scheme, filled in the number and location of cases of each disease shown on the card. The results were collected and summarized in a monthly bulletin entitled "Animal Disease Trends".—R.M.

Cook, R. (1953). **The naturally occurring diseases of laboratory animals and practical measures for the control of these diseases.**—*J. med. Lab. Tech.* **11,** 30-35. **3613**

A discussion of basic general measures for control, followed by a review of the principal diseases of rabbits, g. pigs, mice, rats and monkeys, together with some of C.'s own experience. It is suggested that *Eimeria stiedae* in addition to the well known hepatic lesions may also cause an enteritis in rabbits. In g. pigs, *Pasteurella pseudotuberculosis* infection can be diagnosed at an early stage by routine palpation of the abdominal lymph nodes. Lesions similar to those caused by *Past. pseudotuberculosis* may result from infection with a mould, *Absidium rhamosa.* Salmonella infection in mice is controlled by detection of carriers by a rectal swabbing technique using calcium alginate swabs. In imported monkeys infection with *Shigella flexneri, Sh. sonnei* and *Sh. schmitzi* is common and may be controlled by intramuscular injection of chloramphenicol.

The intrapalpebral test using P.P.D. tuberculin has been found satisfactory in diagnosis of TB. in monkeys.—Barbara G. Clarke.

I. Blakemore, F. (1953). **Symposium on skin diseases. Introduction.**—*Vet. Rec.* **65,** 921-922.

II. Ainsworth, G. C. (1953). **Symposium on skin diseases. Mycological origin.** — *Ibid.* 922-923.

III. Lovell, R. (1953). **Symposium on skin diseases. Bacterial and virus origin.**—*Ibid.* 923-924.

IV. Rewell, R. E. (1953). **Symposium on skin diseases. Transmissible between man and animal.**—*Ibid.* 924-925.

V. Jennings, S. (1953). **Symposium on skin diseases. Hormonal and unknown origin. Alopecia in the dog associated with neoplasia of the testes.**—*Ibid.* 925.

VI. Carmichael, J. (1953). **Symposium on skin diseases. Allergic and anaphylactic origin.**—*Ibid.* 925-926.

VII. Head, K. W. (1953). **Symposium on skin diseases. Neoplastic diseases.** — *Ibid.* 926-929. **3614**

A series of papers dealing with the aspects of skin diseases as in the titles.

Cheli, R. (1954). Contributo allo studio delle lesioni della ghiandola superficiale della terza palpebra del cane. **[Pathology of the superficial (Harderian) gland of the third eyelid of dogs.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 370-385. [English and French summaries.] **3615**

C. examined histologically 8 enlarged superficial (Harderian) glands of the third eyelid, surgically removed from dogs. There was a neoplasm (mixed epithelioma and fibroma) in one, and inflammatory lesions in the others.

—R.M.

Brown, K. E. & Holman, H. H. (1953). **Idiopathic anaemia in a bitch.**—*Vet. Rec.* **65,** 435-436. **3616**

An account of idiopathic anaemia of a macrocytic orthochromic type in a West Highland terrier. Appropriate therapy produced no improvement. The authors referred to a similar anaemia believed to occur in dwarf dogs in the U.S.A. and suggested that anterior pituitary hormones might be expected to be of value for its treatment.

Littman, A., Fox, B. W., Schoolman, H. M. & Ivy, A. C. (1953). **Lethal effect of intragastric irradiation in the dog.** — *Amer. J. Physiol.* **174,** 347-351. **3617**

Seven dogs were subjected to lethal doses of intragastric radiation (through fistulas), using radium (9000 mg.-hours), strontium^{90} (12·0 curie-hours) and ruthenium-rhodium^{106} (4760 roentgen β equivalents). These dogs ate normally and gained weight for three weeks, but subsequently became ill and all died in two months from dehydration, haemoconcentration and leucocytosis.

In a further nine dogs, irradiation of the isolated stomach with similar doses produced similar results, except that three out of five dogs on which gastrectomy was performed after exposure, recovered.—R. Macgregor.

POISONS AND POISONING

Ogilvie, D. D. (1954). **" Chronic " copper poisoning of sheep.**—*Vet. Rec.* **66,** 279-282. [Abst. from author's summary.] **3618**

An account of an outbreak of " chronic " copper poisoning in sheep pastured in an orchard which had been sprayed with a copper preparation. The author contrasted a number of unusual features of the outbreak with those recorded by other workers.

Agostinelli, V. (1954). Cirrosi epatica nelle pecore. **[Cirrhosis of the liver in sheep attributed to the ingestion of copper sulphate.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 662-668. [English and French summaries.] **3619**

Seventy-two cases of cirrhosis of the liver were found during the inspection of sheep slaughtered at the age of two and a half to 5 years. The copper content of 37 out of 43 of these livers was higher than 14 mg./100 g., and in 14 of them was higher than 30 mg./100 g., compared with a normal Cu content of 0·8 mg./100 g. The author suggested that the cirrhosis was caused by the ingestion of copper sulphate mixed with the food.—R.M.

Ridgway, L. P. & Karnofsky, D. A. (1953). **The effects of metals on the chick embryo : toxicity and production of abnormalities in development.**—*Ann. N.Y. Acad. Sci.* **55,** Art. 2. pp. 203-215. [Authors' conclusions modified.] **3620**

The effects of excessive concentrations of

metallic elements on the developing chick embryo may be a useful method for studying the biological properties of the elements. It is apparent that some elements, at least, induce a characteristic effect on the embryo when given at an appropriate period of development, and two elements, given simultaneously, may each induce their specific abnormality in the embryo. Some of the elements caused destruction and regression in an organ already well-developed at the time of treatment, thus demonstrating a teratogenic effect by retrogression of an established organ, rather than by damage to the primordial cells of a developing organ. The specific affinity of some elements and embryonic organs, as suggested by selective injury to these organs, may suggest approaches and methods for damaging neoplastic growths arising from those organs.

WANNTORP, H. & BRICKMAN, S. (1953). Blysulfidens och blysligens toxicitet för idisslare. **[Toxicity of galena and of lead sulphide for ruminants.]**—*Nord. VetMed.* **6,** 306-330. [In Swedish. English and German summaries.] **3621**

The authors mentioned six outbreaks of lead poisoning in sheep and cattle caused by the ingestion of galena (a mineral containing lead sulphide) which had fallen from lorries or railway trucks, and described the experimental reproduction of poisoning by administering the mineral to 6 sheep and a calf. The dose of galena necessary to produce symptoms depended on the time that had elapsed since the mineral was dug; galena which had been stored for 4 years or longer was considerably more toxic than the freshly-dug material, probably as a result of oxidation of sulphide to sulphate. —R. B. HOLCOMBE.

PIRRIE, R. (1952). **The effect of splenectomy and reticulo-endothelial blockade upon the anaemia of lead poisoning in guinea-pigs.**—*J. Path. Bact.* **64,** 211-222. **3622**

Splenectomy, carried out on g. pigs either before or during the daily administration of toxic doses of lead nitrate, was followed by an arrest of the initial fall in the r.b.c. count, remaining at a high level for 40 days and then gradually falling to the same level as in intact poisoned controls by the 70th day. There was a sharp increase in the number of stippled cells. The haemoglobin content of the blood decreased slightly less in the splenectomized than in the intact animals. Subsequent reticulo-endothelial blockade by trypanblue produced effects on the red blood picture similar to those which followed splenectomy.—R. MARSHALL.

SZCZUDŁOWSKA, M. (1953). Uszkodzenie rogówek w zatruciu talem u psa. **[Corneal lesions in a dog following thallium poisoning.]** *Méd. vét., Varsovie.* **9,** 82-83. [In Polish.] **3623**

S. gave details of the clinical course of eye lesions in a dog poisoned with thallium following ingestion of poisoned bait intended for rat destruction. The first lesion was a discharge which soon became purulent, followed by opacity of the cornea. Within a week an ulcer appeared centrally on the cornea in both eyes; the one on the right eye ruptured into the anterior chamber. In the left eye the Descemet membrane became affected and a keratocele developed.—J. R. MITCHELL.

ZADURA, J. & NIEĆ, L. (1953). Masowe zatrucie u koni fosforkiem cynku. **[Poisoning of horses with zinc phosphide.]**—*Méd. vét., Varsovie.* **9,** 550-551. [In Polish.] **3624**

Thirty horses in good general condition were inadvertently given oats and wheat treated with zinc phosphide intended for rat bait; all became ill, with symptoms of colic, increased salivation, muscular tremors, sweating and dyspnoea and all except five died in three and a half to ten hours. Of three which were examined P.M., all had degeneration of the liver and of the heart muscle, oedema of the lungs, and renal haemorrhages. In one which had been treated and died within 10 hours there were also lesions of the mucosa of the alimentary tract and advanced fatty degeneration of various organs.—J. R. MITCHELL.

FAULL, W. B. & WILKINSON, J. S. (1954). **Suspected poisoning in a dog by one of the new organo-phosphorus insecticides.** — *Vet. Rec.* **66,** 375. **3625**

A clin. account of suspected tetraethyl pyrophosphate (TEPP) poisoning in a puppy.

AUSTIN, L. & DAVIES, D. R. (1954). **The part played by inhibition of cholinesterases of the CNS in producing paralysis in chickens.**—*Brit. J. Pharmacol.* **9,** 145-152. [Authors' summary modified.] **3626**

The authors examined five potent anticholinesterases, di-*iso*propyl fluorophosphonate (DFP), *iso*propyl methylphosphonofluoridate (sarin), ethyl *N N'*-dimethylphosphoroamidocyanidate (tabun), 3:3-dimethyl-*n*-butyl 2-methylphosphonofluoridate (soman), and *iso*propyl-ethylphosphonofluoridate (ethyl sarin), for their chronic effects in chickens.

Paralysis was produced by DFP only.

It is improbable that paralysis following

DFP is due directly to the inhibition and prolonged depression of either the true or the pseudocholinesterase of the c.n.s. or the blood.

The plasma cholinesterase was markedly inhibited after poisoning with each of the compounds. The rate of return to normal levels was always rapid (3–5 days). The cholinesterase level of the plasma continued to rise to levels substantially higher than normal; this was particularly striking with DFP.

MITCHELL, R. T., BLAGBROUGH, H. P. & VANETTEN, R. C. (1953). **The effects of DDT upon the survival and growth of nestling songbirds.**—*J. Wildlife Mgmt.* **17,** 45-54. **3627**

Following the aerial application of D.D.T. at the rate of 3 lb. per acre in suitable weather conditions early in June to 20 acres of uncultivated fields bordered by woods and hedgerows, where nesting boxes had been placed during February and March (av. 3·5 boxes per acre) there was considerable mortality among nestlings of wild birds that used the boxes. The fledging success among 149 nestlings observed was 28% in the sprayed area as compared with 86% in a similar unsprayed area. The following year, when spraying was done earlier in the nesting progress, fledging success was 70% and 73% respectively. Chemical analysis of dead birds revealed from 2·6 to 77·0 μg. of D.D.T. per g. body wt. The insect population of the unsprayed area was found to be 17 times that of the sprayed area in 1949 and 6 times that of the sprayed area in 1950.—D. W. JOLLY.

I. NAFTALIN, J. M. & CUSHNIE, G. H. (1954). **Pathology of bracken poisoning in cattle.**—*J. comp. Path.* **64,** 54-74. [Authors' conclusions modified.] **3628**

II. NAFTALIN, J. M. & CUSHNIE, G. H. (1954). **Experimental bracken poisoning in calves.**—*Ibid.* 75-86. [Authors' summary modified.] **3629**

I. In two experiments, 11 heifers were fed experimentally on bracken (*Pteris aquilina*). In experiment 1, sun-dried bracken was fed as 60%, by weight, of the ration with 40% hay or 20% hay and 20% molasses. In experiment 2, sun dried bracken fed as 60% of the ration for 9 weeks was followed by a diet of fresh bracken only. All developed overt signs of bracken poisoning in 32–86 days, characterized by widespread haemorrhage and a rise in temperature up to 108°F.

The essential lesion was bone marrow damage, affecting the megakaryocytes, the primitive white cells and the primitive red cells. Thrombocytopenia and leucopenia resulted. The r.b.c. count in the peripheral blood did not decrease until severe bleeding developed, but the haemoglobin level showed an earlier downward trend.

Accompanying the rise in temperature there was bacterial invasion of the blood. Bacterial infarction of the liver, lungs and kidney may result.

The subcutaneous administration of vitamin B_1 either alone or together with riboflavin, calcium pantothenate, pyridoxine, folic acid, nicotinamide, biotin and inositol from the beginning of bracken feeding and throughout the experiment failed to influence the course of the disease. Unlike the horse and the rat, there was no evidence that cattle fed on bracken develop vitamin B_1 deficiency.

II. Five calves aged 62 to 105 days at the beginning of the experiment were fed on either fresh or dried bracken (*Pt. aquilina*). Another calf fed on grass was studied as a control.

In 3 calves aged 62, 91 and 105 days respectively at the beginning of the experiment the syndrome typical of bracken poisoning in adult cattle developed on the 35th, 29th and 37th days of the experiment. Two calves aged 62 days and 79 days died suddenly from heart failure 29 and 23 days after the start of feeding without rise in temperature or haemorrhage, but they also had severe bone marrow damage.

The essential lesion was bone marrow damage. The most primitive cells of the myeloid and erythroid series and the megakaryocytes were principally affected. Once formed, the mature polymorphs seemed to be unaffected.

All five calves had marked bradycardia but only in one calf were morphological changes observed in the heart. The bradycardia was not influenced by the administration of 250 mg. vitamin B_1 twice a day by drench.

At present no further explanation than that already given [see I *supra*] is offered for these phenomena and although the evidence seems to point to the presence of a poison it is still not possible to decide whether these lesions in the bone marrow and the heart can be ascribed to this alone or to a nutritional deficiency or to both.

See also abst. **3708** (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

TAYLOR, W. M. W. (1954). **A preliminary report of clinical observations on the use of methylpentyne-ol in dogs.**—*Vet. Rec.* **66,** 359. [Abst. from author's summary.] **3630**

T. considered that 3-methylpent-1-yn-3-ol is a useful sedative for dogs.

PEDINI, B. (1954). Concentrazione nel plasma di bovino dell'idrazide dell'acido isonicotinico. **[Concentration of *iso*-nicotinic acid hydrazide in the blood plasma of cattle.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7.** pp. 774-777. [English and French summaries.] **3631**

Following the i/m injection of 1 mg. *iso*-nicotinic acid hydrazide per kg. into 5 healthy cattle, detectable amounts of the drug were present in the blood for 8 hours, reaching a maximum 4 hours after injection. A dose of 2 mg./kg. lasted for 11 hours, with max. concentration also at the 4th hour.—R.M.

DAVIES, G. E., FRANCIS, J., MARTIN, A. R., ROSE, F. L & SWAIN, G. (1954). **1 : 6-Di-4′-chlorophenyldiguanidohexane ("hibitane"). Laboratory investigation of a new antibacterial agent of high potency.**—*Brit. J. Pharmacol.* **9,** 192-196. [Authors' summary modified.] **3632**

1 : 6-Di-4′-chlorophenyldiguanidohexane ("hibitane"), serial no. 10,040, was selected from an extensive series of related compounds for study as the one possessing the highest degree of antibacterial activity. Its antibacterial action is exerted against a wide range of vegetative bacteria both Gram-positive and Gram-negative. The compound is feebly active against bacterial spores. Activity is maintained in the presence of body-fluids but is antagonized by a substance contained in egg-yolk. Attempts to demonstrate development of drug-resistance were unsuccessful. The compound has a very low toxicity for laboratory animals when administered *per os* and does not interfere with phagocytosis by human leucocytes. It has no true systemic antibacterial activity in mice, but is highly active in artificial wounds infected with haemolytic streptococci.

MAGARA, M., YOKOUTI, E., SENDA, T. & AMINO, E. (1954). **The action of a new antibiotic, trichomycin, upon *Trichomonas vaginalis, Candida albicans* and anaerobic bacteria.** — *Antibiot. & Chemother.* **4,** 433-438. [Spanish summary p. 490. Authors' summary modified.] **3633**

A note on the use of this antibiotic prepared from *Streptomyces hachijoensis* isolated from soil in Japan, stating that it is useful in infections of the human vagina with *Tr. vaginalis,* with *C. albicans* and with anaerobic bacteria.

UVAROV, O. & MUGGLETON, P. W. (1954). **Penicillin levels in cow's milk after intramammary infusion of procaine penicillin.**—*Vet. Rec.* **66,** 200-202. [Authors' summary modified.] **3634**

Penicillin levels in the foremilk of cows were studied after intramammary infusion of 300,000 units of procaine penicillin in a gel of mineral oil and aluminium stearate. Levels of over 0·1 I.U. per ml. were found for eight days and all of six cows tested had detectable levels for at least 14 days after administration. The magnitudes of the levels during the first seven days were found to vary inversely with the milk yields of the individual cows.

ULLBERG, S. (1954). **Autoradiographical distribution and excretion studies with S^{35}-labelled penicillin.**—*Proc. Soc. exp. Biol., N.Y.* **85,** 550-553. [Author's summary modified.] **3635**

Radioactive S^{35}-labelled penicillin was injected into mice and its distribution in the various tissues of the body studied by autoradiographical techniques. The results correlate well with the observations that have been made using the microbiological assay for penicillin. In the kidneys the concentration is always, and in the liver generally, higher than in the blood, but in other organs during the whole course of distribution and excretion it is lower than in the blood. In the lungs the concentration nearly approximates that of the blood, while in most tissues it is considerably lower. It is lowest in the central nervous system. The method described can be applied to the study of penicillin distribution in diseased tissues. Preliminary observations revealed the diffusion of labelled penicillin into abscesses, and the difference in distribution of penicillin in the kidneys under the influence of *p*-(di-*n*-propylsulphamyl) benzoic acid (probenecid) and after the administration of penicillin alone.

FOSTER, J. W. & PITTILLO, R. F. (1953). **Metabolite reversal of antibiotic inhibition, especially reversal of aureomycin inhibition by ribo-**

flavin.—*J. Bact.* **66,** 478-486. **3636**

A large number of pure metabolites were found to reverse the growth inhibition caused in small plate inocula of a strain of *Bact. coli* by certain concentrations of penicillin G, aureomycin, dihydrostreptomycin, terramycin or chloramphenicol. Some of these metabolites, including riboflavin, were particularly active against aureomycin with 12 species of bacteria. The relationship between riboflavin and aureomycin was shown to be competitive in tests with a strain of *B. subtilis*, and here aureomycin was markedly potentiated by sub-inhibitory concentrations of dichlorodiaminobenzene, a known inhibitor of riboflavin synthesis. The authors tentatively proposed that the mechanism of this potentiation may be one of " protected inhibition " and discussed the possible significance of this concept as a basis for new departures in antibiotic therapy.

—G. P. Marshall.

Schweizer, R. (1954). Orientierende Untersuchungen über Largactilwirkung beim gesunden Hund. **[Action of chlorpromazine hydrochloride as a prenarcotic in the dog.]**—*Schweiz. Arch. Tierheilk.* **96,** 143-151. [English, French and Italian summaries.] **3637**

Chlorpromazine hydrochloride given to four dogs in combination with pentobarbitone sodium and thiopentone sodium eliminated the excitement phase of pentobarbitone sodium narcosis, and decreased the dose of the narcotics required by one-third.—W. R. Bett.

Hall, L. W. & Weaver, B. M. Q. (1954). **Some notes on balanced anaesthesia for the dog and cat.**—*Vet. Rec.* **66,** 289-293. [Abst. from authors' summary] **3638**

The authors described means of reducing the dosage of barbiturates used for general anaesthesia in dogs and cats and also the apparatus for, and the technique of, controlled respiration.

Smith, A. & Fairer, J. G. (1953). **Hibernation anaesthesia in major surgery. A report of 36 cases.** — *Brit. med. J.* Dec. 5th, 1247-1248. **3639**

Physical cooling of the body in human beings by the application of ice-packs etc. is unsatisfactory as a preparation for major surgery as it stimulates the defence mechanism and consequently predisposes to shock. The " hibernation " anaesthesia described produces a depression of the autonomic nervous system similar to that found in animals during hibernation (though not truly comparable), in which the patient does not react (with shock) even to prolonged major surgical procedure. The body temperature drops to 95°–96°F. The technique of producing autonomic blockade is as follows:—50 mg. of promethazine-8-chlortheophyllinate are given by mouth two hours before operation, followed one hour later by a subcutaneous injection of 100 mg. of pethidine with 0·43 mg. of hyoscine hydrobromide. A mixture of 50 mg. promethazine, 100 mg. pethidine, and 50 mg. chlorpromazine is injected i/v in divided doses in the half hour preceding operation. In 36 major operations this method gave excellent results, preventing shock during and after the operation and postoperative nausea or headache.—W. R. Bett.

See also absts. **3409** (chloramphenicol ointment in mastitis); **3410** (treatment of mastitis with antibiotics); **3477** (sulphaquinoxaline and sulphamethazine); **3478** (cortisone); **3481** (" daraprim "); **3492** (influenza); **3535** (sheep dips); **3540** (insecticides); **3550** (*Strongyloides*); **3564** (anthelmintics and antibiotics); **3565** (tryptophane); **3579** (aureomycin for fattening of swine); **3580** (vitamin-sparing effect of antibiotics); **3581** (antibiotics and reproduction in swine); **3610** (oral sodium acetate against ketosis in cows); **3625** (poisoning in a puppy by organo-phosphorus insecticide); **3627** (D.D.T.); **3667** (antibiotics for preservation of fresh beef); **3712-3714** (books, antibiotics); **3715** (book, chemotherapy).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Borst, J. G. G. (1953). **The homeostatic mechanisms governing water and electrolyte balance.**—*Acta med. scand.* **146,** 33-35. [In English.] **3640**

B. discussed the mechanism of diuresis, with reference to pathological conditions in human beings, such as nocturia and oedema.

—R.M.

Barisson Villares, J. & Berthet, L. A. (1952). Contribuição para a demonstração do funcionamento das glândulas sudoriparas nos *Bos taurus* e *Bos indicus*. **[Function of the sweat glands in European and zebu cattle.]**—*Bol. Indust. anim.* **13,** 25-36. [English abstract and conclusions.] **3641**

It has been well established that cattle have sweat glands with ducts opening into the hair follicles, but no proof had been adduced that these glands actually function.

In 80 experiments in well ventilated cattle byres at temperatures varying between 22·6° and 33·0°C. and relative humidity of from 63 to 75%, using the method of Wada for demonstration of water and of Aubert for demonstration of chlorides, the authors demonstrated

exudation of water and of chlorides from hair follicles all over the body; and the absence of both water and chlorides from areas between the hair follicles. Both European (*Bos taurus*) and zebu (*B. indicus*) cattle were used, as well as cross breeds, but no difference was found. [No indication is given of the quantity of water or chlorides secreted by the sweat glands.]—R. MACGREGOR.

SMITH, A. N. (1953). **Release of histamine by the histamine liberator compound 48/80 in cats.**—*J. Physiol.* **121,** 517-538. **3642**

A detailed study, using both prolonged and acute dosage, of the effects of the synthetic histamine-releasing agent "compound 40/80", with special reference to histamine content of different tissues.—P. H. HERBERT.

KARE, M. R. (1953). **Effects of hypophysectomy, castration and testosterone propionate therapy on certain phosphorus fractions in skeletal muscle.**—*Amer. J. Physiol.* **175,** 51-55. **3643**

As a result of castration or hypophysectomy, the inorganic phosphorus content of perineal muscle of rats decreased: that of rectus femoris muscle decreased after hypophysectomy but remained unchanged after castration. After the injection of testosterone, the P content of perineal muscle increased and that of rectus femoris muscle remained unchanged. K. discussed the difference in P metabolism between these two functionally different groups of muscles in rats.—R.M.

GROSS, J. (1953). **Evaluation of structural and chemical changes in connective tissue.**—*Ann. N.Y. Acad. Sci.* **56,** Art. 4. pp. 674-683. **3644**

G. described the changes observed under the electron microscope in collagen fibres exposed to the action of sodium hydroxide, guanidine hydrochloride, trypsin, pepsin, and collagenase.—R.M.

HEWITT, H. B. (1954). **The mechanics of subcutaneous injection.**—*Brit. J. exp. Path.* **35,** 35-40. [Author's summary slightly modified.] **3645**

The distribution of various coloured fluids and suspensions immediately after injection into loose connective tissue was studied under direct observation by making the injections into the undersurface of retroverted skin flaps in living mice.

When suspensions of particulate matter are injected, the particles (stained bacteria, Indian ink, carmine, tumour cells) do not diffuse far from the needle point but are concentrated and localized at this site while the suspending medium diffuses outward.

Injection of an emulsion results in immediate separation of the discontinuous from the continuous phase. H. described the dependence of these "filtration" effects on the accepted structure of connective tissue and discussed several implications of the findings.

[These findings in mice should be compared with those of W. M. Henderson in cattle (*V.B.* **14,** 180; **17,** 211 & 239 and **21,** 574).]

WEITZEL, G., FRETZDORFF, A.-M. & EBERHAGEN, A. (1953). Zink in den Augen von Säugetieren. **[Zinc content of the mammalian eye.]**—*Hoppe-Seyl. Z.* **292,** 221-231. **3646**

The authors determined the zinc content of the lens, vitreous body, retina, choroid coat, and iris of 750 eyes from horses, deer, adult sheep, calves, domesticated and wild pigs, sheep, goats, rabbits, hares, dogs, foxes, martens, weasels and cats. They defined a tissue as being rich in zinc if it contained 50 μg. Zn/g. fresh tissue or more. According to this criterion the retina, lens and vitreous body were, with a few exceptions, not rich in Zn, while the retina and choroid coat were. The highest concentration observed was 18,710 μg. Zn/g. fresh tissue in the choroid coat of the marten. That of the choroid coat of the dog averaged 2340 μg. Zn/g. or 1·46% Zn.—R.M.

CROSS, B. A. (1954). **Milk ejection resulting from mechanical stimulation of mammary myoepithelium in the rabbit.** [Correspondence.]—*Nature, Lond.* **173,** 450-451. **3647**

C. reported experiments in lactating rabbits, in which a single teat duct of one mammary gland was cannulated and connected to a kymograph, milk ejection being studied following the stimulus of a sharp tap on the cannulated segment of the mammary gland. Tap stimuli activate the contractile elements directly, without nervous intervention.—W. R. BETT.

PIANA, C. (1953). La mesoinosite potenzia l'azione masteoplastica della vitamina E? (Ricerche sperimentali.) **[Action of vitamin E on the mammary gland.]**—*Zootec. e Vet.* **8,** 337-343. [English summary.] **3648**

Spayed female g. pigs fed for 90 days on a diet enriched with 10–20 mg. α-tocopherol developed tubular alveoli and some secretion in the mammae. The addition of 20 mg. *i*-inositol

to the diet produced no increase in alveolar development. In controls fed a normal diet the mammae consisted principally of connective tissue.—R. MACGREGOR.

KUNKEL, H. O., STOKES, D. K., JR., ANTHONY, W. B. & FUTRELL, M. F. (1953). **Serum alkaline phosphatase activity in European and Brahman breeds of cattle and their crossbred types.**—*J. Anim. Sci.* **12,** 765-770. [Authors' summary and conclusions modified.] **3649**

The alkaline phosphatase was determined in a total of 299 cattle using para-nitrophenyl phosphate as the substrate. The animals in this study included *Bos indicus* and *Bos taurus* breeds, and certain of their crosses. The following conclusions may be drawn:

The average of serum alkaline phosphatase activities of immature zebu cattle is approximately twice that of the European breeds of the same age.

Crossbreds such as the offspring of crosses between the zebu and the Hereford or Jersey, and the Santa Gertrudis breed have phosphatase levels which fall between the European and zebu breeds.

Although the alkaline phosphatase activity of bovine serum decreases with age, zebu cattle continue to have the higher phosphatase levels.

Selection for dairy type as opposed to selection for beef type has little or no significant effect on the serum alkaline phosphatase. Sex has no marked effect.

Repeatability of the serum alkaline phosphatase within groups of Angus or Hereford bulls or Hereford steers is low, suggesting a considerable effect of environmental factors.

In Hereford and Angus bulls, the phosphatase level appears to be negatively correlated with factors affecting rate of gain, efficiency of feed utilization and feed intake.

HAAG, F. (1953). Die artspezifische Reaktion der hämatopoetischen Organsysteme des Kaninchens. **[Regeneration of blood corpuscles after bleeding in rabbits.]** — *Inaug. Diss., Munich.* pp. 32. **3650**

An attempt was made to withdraw 50% of the estimated blood volume (calculated at 1/20th body wt.) from 6 rabbits, but only 2 survived: from one, 71 ml. (47·33%) was taken in 75 min. *via* the jugular vein, and from the second 50 ml. (35·71%) in 12 min. *via* the carotid artery. The blood pictures returned to normal in 12 and 13 days, showing meanwhile anisocytosis, poikilocytosis with predominance of macrocytes, rare erythroblasts and Jolly bodies, no punctate basophilia, and an increase of polychromatic cells, and in particular of reticulocytes (up to 28·7% and 23% in each rabbit respectively). There was some degree of leucocytosis, with a reduction of lymphocytes and an increase of pseudo-eosinophiles.

—E. COTCHIN.

LANDGREN, S. & RUTQVIST, L. (1953). **Electrocardiogram of normal cold-blooded draft horses after work.**—*Nord. VetMed.* **5,** 905-914. [In English. German and Swedish summaries.] **3651**

The E.C.G. of healthy draught horses after moderate work showed no marked divergences from the E.C.G. at rest. After hard work there is an elevation of the S-T segment contrasting surprisingly with a depression of this in man under similar circumstances. An alteration in the potential distribution between the electrodes, induced by change in position during work may be important.—W. S. MARSHALL.

PIANA, C. (1954). Esperienze sul comportamento degli animali ruminectomizzati. **[Rumenectomy in sheep.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 218-222. [English and French summaries.] **3652**

P. described the experimental surgical removal of the rumen in 11 unweaned lambs. The body weight of rumenectomized lambs increased only if they were fed on milk after weaning, there being insufficient capacity for bulky foods. After 4 months there was histological evidence that slight regeneration of the rumen had taken place. Food took 5–6 days to pass through the digestive tract, compared with 19 days in normal sheep.—R.M.

ALEXANDER, F. (1952). **Some functions of the large intestine of the horse.**—*Quart. J. exp. Physiol.* **37,** 205-214. [Author's summary modified.] **3653**

The author described techniques for cannulating the caecum, ventral and dorsal colon of the horse. Caecal and colonic movements consisted of irregular contractions, of which 3 types were recognized. Withholding food from the horse caused reduction in frequency or cessation of all contractions of caecum and ventral colon; the dorsal colon remained unaffected. There was no evidence of antiperistalsis, as judged by the movement of carbon granules.

Adrenaline inhibited, and carbamylcholine increased, the frequency of the contractions. Histamine and posterior pituitary extract inhibited movements.

The concentration of volatile fatty acid in

the liquor of the caecum and ventral colon was decreased by starvation and increased by feeding. This effect was not marked in the dorsal colon. The proportion of propionic acid in the ventral colon was greater than in the dorsal colon.

The rate at which cotton threads disintegrated when suspended in the caecum, ventral and dorsal colon decreased in an oral-caudal direction. Withholding food greatly reduced the rate of disintegration.

MACKLIN, C. C. (1954). **The pulmonary alveolar mucoid film and the pneumonocytes.**—*Lancet.* **266,** 1099-1104. [Author's summary copied *verbatim.*] **3654**

From *a-priori* reasoning there ought to be a thin aqueous cohesive flexible film on the pulmonary alveolar walls, in constant slow movement toward the phagocytic pneumonocytes and bronchioles, in course of continual renewal as its expended solid remnants are cast off, and incapable of self-adhesion. Its normal total volume in the human lungs would be at least 20 c.cm.

Certain light-microscope evidence from fresh and fixed and stained lung tissue under conventional, phase-contrast, and polarised illuminations supports this conception of a dynamic mucoid alveolar microfilm and suggests that it contains acid mucopolysaccharides and myelinogens.

This mucoid film has been credited with performing vital functions, such as assisting in the removal of fine living and dead particulate matter, the maintenance of a constant favourable alveolar surface tension, the facilitation of gaseous exchange, the protection of the underlying tissue from desiccation, and the suppression of invading micro-organisms. Its mechanism of production normally insures a constancy of volume, thickness, water and solid content, and other features.

There is evidence pointing to the granular pneumonocytes as the originators of the secretion which composes this film.

The water is contributed constantly by the blood-plasma of the pulmonary capillaries in an amount (in man) of about 400 ml. a day. This evaporates as fast as it is produced, but solids in the film are never increased.

This mucoid film is visualized as supported by the attenuated epithelium of the membranous pneumonocytes which Low has reported from his electron micrographic studies.

The pneumonocytes comprise three forms —granular, phagocytic, and membranous—and all are regarded as specialisations of the original endodermal epithelium of the lung. Observations on cytogenesis and granulogenesis are given.

GROSS, P. & WESTRICK, M. (1954). **The permeability of lung parenchyma to particulate matter.** — *Amer. J. Path.* **30,** 195 - 213. [Authors' summary slightly modified.] **3655**

The authors demonstrated that particulate matter *per se* may penetrate the respiratory membrane and migrate to perivascular and peribronchial positions without the mediation of phagocytic cells.

Penetration of the respiratory membrane occurs in multiple, small, scattered foci near the apposition to alveoli and larger vessels and bronchi. Although not demonstrated, it is nevertheless probable that the penetration of the respiratory membrane by particulate matter is dependent upon defects in the membrane, possibly in the form of erosions. Direct penetration of the alveolar lining by sufficiently fine particles is also a possibility.

Important physical factors which make penetration of the respiratory membrane and the migration of particles possible are the fluctuating pressures of the respiratory cycle and the respiratory excursions of the lung tissue.

On the basis of present experimental observations it would appear that most interstitial pneumoconiotic pigment deposits are probably extracellular agglomerations of particles.

Assertions that pigment had been carried to its interstitial pulmonary position by macrophages are conjectural and are based upon a theory which is physiologically unsound. The experimental support of this theory is founded upon a premise which is unacceptable in the light of our present knowledge. More convincing supportive data should be required for the continued acceptance of the theory of the "emigrating-immigrating" or "returning" macrophage.

BENOIT, J., ASSENMACHER, I. & MANUEL, S. (1952). Pénétration, variable selon la longueur d'onde, des radiations visibles jusqu'à l'hypothalamus et au rhinencéphale, à travers la région orbitaire, chez le canard. [**The penetration of light rays of various wavelengths to the rhinencephalon and mesencephalon of the duck's brain, *via* the orbital region.**]—*C. R. Acad. Sci., Paris.* **234,** 1695-1697. **3656**

The authors studied the action on the skull [no details given] of the duck of visible light rays, with the object of ascertaining its stimulative action on the pituitary gland and the resultant effect on the gonads. They measured

the opacity to light rays of different wavelengths on the orbital region of the skull, and concluded that light rays, especially those of long wavelengths, can reach the hypothalamus region *via* the orbit and the eye.—R.M.

HUTTER, O. F. & KOSTIAL, K. (1954). **Effect of magnesium and calcium ions on the release of acetylcholine.**—*J. Physiol.* **124,** 234-241. [Authors' summary slightly modified.] **3657**

The authors used the perfused superior cervical ganglion of the cat for studying the effects of magnesium and calcium ions on the release of acetylcholine from the preganglionic nerve endings. Magnesium ions in concentrations causing block of ganglionic transmission (15–25 mM) reduce the output of acetylcholine. Calcium ions (4–10 mM) relieve the block produced by magnesium ions and restore the output of acetylcholine. By increasing the concentration of calcium ions in Locke's solution to 8–10 mM, twice the usual amount of acetylcholine is liberated by preganglionic stimulation.

PINCUS, G. [Edited by.] (1952). **Recent progress of hormone research. The Proceedings of the Laurentian Hormone Conference. Vol. VII.** pp. 527. New York: Academic Press Inc. $9.50. **3658**

This book contains 14 papers and discussions thereon given at the Laurentian Hormone Conference, Quebec, 1951. The subject matter is divided into four sections:—(1) pituitary hormones; (2) sex cycles; (3) aspects of steroid hormone chemistry and physiology; and (4) hormones and metabolism; and contains, for example, Aspects of pituitary-mammary gland relationships, by S. J. Folley; Some physiological and medical aspects of the gonadal cycle of domestic animals, by F. X. Gassner; A comparison of the histological changes induced by experimental hyperadrenalcorticalism and inanition by B. L. Baker; and Some clinical aspects of adrenal cortical and fluid metabolism by C. W. Lloyd. There are author and subject indexes.—E. MARSH JONES.

CAMPBELL, J., HAUSLER, H. R., MUNROE, J. S. & DAVIDSON, I. W. F. (1953). **Effects of growth hormone in dogs.** — *Endocrinology.* **53,** 134-162. **3659**

Dogs injected with purified bovine growth hormone developed severe diabetes but (except in one case) recovered after the injections ceased. Plasma volume increased, owing to increase of globulin and fibrinogen, but prothrombin decreased, hence clotting was delayed. The r.b.c. maintained their proportion, but there was marked leucocytosis due to increases of neutrophile granulocytes. Insulin extractable from the pancreas was low, but there was increase of lipoid and fat-free solids in the liver.—R. MACRREGOR.

MAQSOOD, M. (1954). **Influence of the thyroid on body temperature of rabbits and rams.**—*Vet. Rec.* **66,** 306-309. [Author's summary modified.] **3660**

M. studied the influence of the administration of different doses of a thyroidal substance on the rectal temperature of the growing male rabbit and the ram.

Dosage within the physiological limits did not affect the temp. while higher levels resulted in a significant increase in the temp. It appears that a limited relationship may exist between the rise in the temp. and the dosage of thyroprotein administered in the young male rabbit. The increase above the normal temp. of the thyroxine-treated rabbits during summer was relatively higher than the increase observed during winter. Administration of moderate doses of thyroprotein had no significant effect on the rectal temp. of the young ram.

Thyroidectomy or continuous administration of thiouracil resulted in a significant decrease in the body temp. of young rabbits and rams when compared with their respective controls. After simultaneous administration of thyroxine in amounts about equal to the estimated thyroid hormone secretion rate to young thiouracil-treated rabbits the rectal temp. was similar to that of the control animals.

BARTELS, E. D. (1954). **Action of the parathyroid hormone. (A survey.)** — *Acta endocr. Copenhagen.* **15,** 71 - 81. [In English. Author's conclusions and summary copied *verbatim.*] **3661**

The following conclusion may be drawn from the above survey: The parathyroid hormone is an important factor in the regulation of the calcium and phosphate balance of the body. It acts on the kidneys, where it accelerates the excretion of phosphate in the first instance and possibly also brings about altered conditions for the excretion of other ions. After prolonged administration the hormone causes destruction of the kidney due to calcium deposits. It has a direct action on the bones, which under its influence give off calcium and phosphate to the blood. It probably acts on the liver, too, possibly by interfering with the production of certain albumin fractions. Further, it possibly acts on the phosphate content of all body cells. It has little or no influence

on the absorption of calcium and phosphate from the intestinal tract. The real biochemical point of attack of the hormone is still unknown. Under normal blood conditions the secretion is regulated by the calcium level of the blood.

FRIANT, M. (1954). Les caractéristiques fondamentales du cerveau des ongulés (*Ungulata*) périssodactyles et artiodactyles. **[Fundamental characteristics of the brain of ungulates (Perissodactyla and Artiodactyla).]**—*C. R. Acad Sci., Paris.* **238,** 516-518. **3662**

F. described parts of the brain which are anatomically similar in Perissodactyla and Artiodactyla. She considered that these similarities confirmed the opinion that both groups of ungulates originated from common stock in the Eocene period.—R.M.

KETZ, H.-A. (1952/53). Beitrag zur Anatomie und Histologie des Kleinhirns des Schweines mit Gewichtsmessungen am Gesamthirn. **[Anatomy and histology of the cerebellum of the pig.]**—*Wiss. Z. Humboldt-Univ.* **2,** No. 5. pp. 91-109. **3663**

A description, illustrated by numerous photomicrographs (some in colour) and tables, of the structure of the cerebellum of the pig. K. gave data for organ weight and loss on fixation and preservation. He described the outward appearance and the histology, with details of fine structure of the cortex, Purkinje cells and Golgi cells, and glomeruli, and of the techniques of fixation, staining, sectioning and cell-measurement.— F. R. PAULSEN.

PERROTT, J. W. (1954). **Advances in the anatomical investigation of the lymphatic system with special reference to some pathological applications.**—*Edinb. med. J.* **61,** 50-63. **3664**

P. discussed the history of knowledge concerning the lymphatic system from the time of Galen to the present, and modern methods for the demonstration of lymphatic vessels in anatomical preparations. He discussed the importance of the lymphatic system in pathology, with reference to metastasis of malignant neoplasms, defensive mechanisms, repair of wounds, and abnormalities in the development of the lymphatic system.—R.M.

DAWES, J. D. K. & PRICHARD, M. M. L. (1953). **Studies of the vascular arrangements of the nose.**—*J. Anat., Lond.* **87,** 311-322. **3665**

The authors described the distribution and patterns of the vascular system of the nasal mucosa of the dog, as found by injection and by histological methods, using 23 animals. For comparative study of certain features they used also 19 cats, 18 rabbits, 4 rats, 6 goats, 3 sheep and 2 pigs. They found arterio-venous anastomoses in the dog, cat and rabbit. They discussed briefly some aspects of the physiology of the nose in the light of these findings.

—R. N. SMITH.

See also abstr. **3717-3718** (books, physiology); **3719** (book, biochemistry).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

NORTON, R. & ARMSTRONG, E. C. (1954). **A milk-borne outbreak due to *Salmonella typhi-murium*.** -- *Mon. Bull. Minist. Hlth. Lab. Serv.* **13,** 90-95. [Abst. from authors' summary.] **3666**

An account of an explosive milk-borne outbreak of food poisoning due to *S. typhi-murium,* affecting at least 252 inhabitants of a town and the surrounding district in Durham county. The estimated number of persons at risk was 3,500. The vehicle of infection was raw milk from tuberculin tested cows.

S. typhi-murium was isolated from the faeces and milk of a cow which calved at the time of onset of the outbreak, also from 196 samples of faeces from notified cases and from 15 out of 23 milk handlers who were alleged to be symptomless.

As soon as the milk was pasteurized, the number of notifications fell rapidly. The restraint order on the sale of raw milk was maintained in operation for 5 weeks, by which time milk handlers and the suspected cow were declared free from infection.

GOLDBERG, H. S., WEISER, H. H. & DEATHERAGE, F. E. (1953). **Studies on meat. IV. The use of antibiotics in preservation of fresh beef.** —*Food Tech.* **7,** 165-166. [Authors' summary slightly modified.] **3667**

Six antibiotics, penicillin, streptomycin, bacitracin, chloramphenicol, terramycin and aureomycin were tested for their preservative action in fresh ground beef. The last three antibiotics lengthened the keeping quality of beef and showed a high activity against pure cultures of microflora isolated from deep tissues of beef. Assay for aureomycin residue in stored beef revealed no detectable antibiotic after 72 hours.

MURDOCK, C. R. (1954). **The occurrence of salmonella in liquid egg.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **13,** 43-45. **3668**

Bacteriological examination of batches of ducks' and hens' eggs arriving at a Northern Ireland factory for processing revealed respective levels of infection of 48·2% and 2·1%.

—W. S. MARSHALL.

ANON. (1954). **Salmonella in duck eggs. A report of a survey made during the three years 1950-52 by the Salmonella Sub-Committee of the Public Health Laboratory Service.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **13,** 38-43. **3669**

During a three year period examination of duck eggs revealed a 0·15% level of infection. The author indicated the relative degrees of infection in shop eggs, packing-station eggs and farm eggs and emphasized the necessity for prolonged cooking of all duck eggs.

—W. S. MARSHALL.

ANON. (1953). **A new era in the progress of veterinary science. A co-ordinated plan by the FAO and India. International Training Centre on manufacture of veterinary virus vaccines. Inauguration at Izatnagar, U.P.**—*Indian vet. J.* **29,** 363-376. **3670**

Thirty-three officers from 7 eastern countries underwent training for 3 weeks in the preparation of veterinary virus vaccines at the Indian Veterinary Research Institute, Izatnagar. The training centre was held under the joint auspices of FAO and the Government of India, and 12 foreign instructors participated besides the Institute staff.—R. N. MOHAN.

See also absts. **3518** (Newcastle disease in man); **3551-3554** (trichinosis); **3614** (symposium on skin diseases); **3709** (report Union of South Africa); **3722** (Italian veterinary research institutes).

REPRODUCTION AND REPRODUCTIVE DISORDERS

SCHINDLER, H. & VOLCANI, R. (1953). **[The influence of sodium salicylate and sodium benzoate on the life span of sperm cells in diluted bull semen.]**—*Refuah Vet.* **10,** 10-15. [In Hebrew.] [Abst. from English summary p. 33.] **3671**

The addition of 0·5% sodium salicylate to bull semen diluted with egg yolk-citrate was the most effective means of prolonging the life of the spermatozoa, when compared with diluted semen to which sodium benzoate or sulphanilamide had been added.—R.M.

VOLCANI, R. & BERMAN, A. (1953). **[The influence of whole blood, serum or plasma on bull semen.]**—*Refuah vet.* **10,** 139-143. [In Hebrew. Abst. from English summary pp. 178-180.] **3672**

The addition to diluted semen of either 5–10% whole blood, 10% plasma, or 5% serum, taken from the same bull which supplied the semen, prolonged the life of the spermatozoa and increased their motility.

—R.M.

GROOTENHUIS, G. (1953). Over de toepassing van het diepvriezen van sperma in de praktijk. **[Deep-freezing of semen.]**—*Tijdschr. Diergeneesk.* **78,** 861-869. [English, French and German summaries.] **3673**

Semen is diluted 4 times with citrate egg yolk buffer and this suspension is mixed with equal parts of glycerol citrate buffer. A temperature of −5°C. is maintained until the semen is frozen; after that it is cooled to −70°C. Before use quick thawing of the semen with the aid of warm water is necessary. G. described an apparatus on the lines of those used by English workers but with modifications.

—C. A. VAN DORSSEN.

VAN BEKKUM, D. U. & KASSENAAR, A. A. H. (1954). **The metabolic action of testosterone and related compounds. III. Effect of D-amino acid oxidase activity.**—*Acta endocr., Copenhagen.* **15,** 9-16. [In English. Authors' summary slightly modified.] **3674**

The authors studied the effect of testosterone propionate (T.P.) on the D-amino acid oxidase (D-A.O.) activity of the kidney tissue of mice and of the liver and kidney tissue of rats.

In castrated male and female mice treatment with T.P. causes a significant increase of kidney D-A.O. activity within a few days of treatment.

In castrated male rats T.P. causes an increase of liver D-A.O. activity. This effect is not secondary to an increased food consumption.

PHILLIPS, W. E. J., MAW, W. A. & COMMON, R. H. (1953). **The desoxyribonucleic acid content of the liver nuclei of immature pullets treated with gonadal hormones.**—*Canad. J. Zool.* **31,** 167-172. **3675**

In immature pullets treated with gonadal hormones the number of liver cell nuclei was

significantly increased, this accounting for half the increase in liver weight. The remainder of the increase may have been due to cellular hypertrophy. The average amount of DNAP (deoxyribonucleic acid phosphorus) per nucleus was not significantly affected.—R. GWATKIN.

ROBINSON, T. J. (1954). **Relationship of oestrogen and progesterone in oestrous behaviour of the ewe.** [Correspondence.] — *Nature Lond.* **173,** 878. **3676**

Experiments with ovariectomized ewes indicated that oestrus in the ewe is under dual progesterone-oestrogen control and that this accounts for the phenomenon of silent oestrus or ovulation without oestrus, which occurs at the first ovulation of the breeding season, or when ovulation is induced by gonadotrophin injections in anoestrus.—A. ACKROYD.

ROBINSON, T. J. (1954). **The production of coincident oestrus and ovulation in the anoestrous ewe with progesterone and pregnant mare serum.** — *J. Endocrin.* **10,** 117-122. [Author's summary modified.] **3677**

Sixty crossbred maiden ewes, 12 of which were hysterectomized, and 18 mature ewes were used during the non-breeding season in two experiments involving injection with 75 mg. of progesterone i/m and 1000 i.u. of pregnant mare serum (PMS) s/c, either alone or in combination.

Progesterone given as two daily injections of 12·5 mg. each for 3 days followed 2 days later by 1000 i.u. of PMS resulted in oestrus with ovulation in 16 out of 18 ewes treated. The two remaining ewes failed to ovulate owing to the presence of active corpora lutea.

Three injections of 25 mg. progesterone/day, or a single injection of 75 mg. progesterone followed by PMS were decreasingly less effective in inducing oestrus.

Progesterone alone in the form of two daily injections of 12·5 mg. for 3 days was followed by ovulation in 5 out of 6 mature ewes, 3 of them exhibiting oestrus and producing lambs subsequently.

Time relationships were physiologically normal, oestrus commencing 24 to 26 hours after PMS and preceding ovulation by 10–20 hours. The ovaries showed no histological abnormalities.

Hysterectomized and intact ewes responded alike, suggesting that the conditioning effect of progesterone is a central phenomenon.

DAWSON, F. L. M. (1954). **Progesterone in functional infertility of cattle.**—*Vet. Rec.* **66,** 324-326. [Author's summary copied *verbatim.*] **3678**

Forty-seven heifers or cow-heifers with prolonged histories of infertility were treated with 100 mg. progesterone by implantation, and thereafter 36 held to first or second service. Of 18 kept as untreated controls from the same herds, 15 failed to hold to at least five services each while the treated animals were settling.

FILMER, J. F. (1954). **Infertility in cattle and sheep.**—*N.Z. J. Agric.* **88,** 15. **3679**

In New Zealand 8% of dairy cows fail to conceive each breeding season, but 80% of these become pregnant the following year. Sterility and abortion are associated with *Brucella, Vibrio, Trichomonas* and *Leptospira* infections. Brucellosis causes infertility in rams.

—C. C. BANNATYNE.

BONFERT, A. & FROMM, G. (1953). Studium über Vorkommen und Wesen verkürzter Brunstintervalle. **[Incidence and nature of shortened oestrous intervals in cows.]**— *Fortpfl. Besamung Haustiere.* **3,** 65-66 & 77-79. [English summary.] **3680**

The authors observed the occurrence of a shortened oestrous interval in 262 out of 5,427 cows over a period of 5 years; in 228 of these the shortened interval occurred between the first and second oestrus *post partum* and in 25 cases the shortened interval was repeated. In 34 cases the shortened interval occurred between later oestrous periods. The condition was commoner in older cows and especially during June and July. Cows with shortened intervals had a lowered fertility and the authors concluded that the condition is unphysiological.

—R. B. HOLCOMBE.

COID, C. R. & MCDIARMID, A. (1954). **Some observations on the retention of the foetal membranes in dairy cattle after their first pregnancy.**—*Vet. Rec.* **66,** 350-351. [Authors' summary copied *verbatim.*] **3681**

The incidence of foetal membranes retained for longer than 72 hours in 382 dairy cattle maintained in an isolation compound was 14 (3·7 per cent), after their first pregnancy.

In one case of retention the foetal membranes were removed manually; the remaining 13 cases were not subjected to manual interference but eight of these were treated with stilboestrol.

The loss of milk due to the retention of foetal membranes, in the animals observed, was slight.

It was found that the subsequent breeding history of the animals was apparently unaffected although the retained membranes were not removed manually.

HAFEZ, E. S. E. (1954). **Foetal atrophy in the buffalo.**—*Vet. Rec.* **66,** 264-268. [Author's summary modified.] **3682**

H. dissected the genital organs of 50 pregnant and 24 non-pregnant Egyptian domestic buffaloes to determine the possible incidence of foetal atrophy.

Four types of foetal degeneration were recorded, these occurring at different stages of pregnancy.

The endometrium had the normal colour and appearance after complete foetal absorption.

Foetal atrophy was associated with a smaller corpus luteum and a shorter cervix than those of healthy pregnancy.

This phenomenon was not followed by the regression of the corpus luteum of pregnancy; this explains the suppression of oestrus after unsuccessful pregnancy.

The normal pregnancy rate does not represent the fertilisation rate nor the conception rate in this uniparous animal.

H. discussed the different factors involved in foetal atrophy.

BIANCHI, C. (1954). Displasia del sistema pilifero ed ungueale ad eziologia ignota in vitelli neonati. (Nota preventiva.) [**Abnormal development of hair and hoof of unknown aetiology in new-born calves. Preliminary note.**]—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 959-962. [English and French summaries.] **3683**

B. described a condition of new-born calves, seen in a large part of The Marches of Italy, in which the hair fell out and the hooves were incompletely formed. Affected calves, although active, were unable to take weight on thier limbs and were therefore unable to suck. Death commonly followed as a result of starvation and secondary infection of the denuded hooves. B. discussed possible aetiological factors.—R.M.

THIÉRY, G. (1954). Polyovogonie folliculaire et brachyourie chez la chienne. [**Plurality of ova within the Graafian follicles of bitches with hereditary shortness of the tail.**]—*Rec. Méd. vét.* **130,** 162-164. **3684**

A tailless (not docked) bitch was bred to a normal male and the offspring studied. All the tailless and short-tailed bitches resulting exhibited, in serial section preparations, 2–8 ova within the Graafian follicle, usually an even number. The opportunity has not yet arisen to correlate the number of corpora lutea found with the number of puppies per litter, which, it is presumed, would determine whether puppies originate from more than one of the ova within a single follicle.

—F. L. M. DAWSON.

SORSBY, A. & DAVEY, J. B. (1954). **Ocular associations of dappling (or merling) in the coat colour of dogs. I. Clinical and genetical data.**—*J. Genet.* **52,** 425-440. [Authors' summary copied *verbatim.*] **3685**

' Wall eye '—partial or total discoloration of the iris—is known to occur frequently but not constantly in dappled dachshunds, merled collies, and other merled breeds of dog. Observations are recorded on the dappled dachshunds, the merled collie, and the merled miniature collie, showing that in contrast to the inconstant iris anomaly the tapetum of such animals is always anomalous. It is generally totally lacking and when present it is rudimentary. The anomalies of the tapetum are easily observed with the ophthalmoscope.

It is known that the dappled or merled animal is heterozygous, and it has been suggested that there is a gene **M** responsible for merling. Evidence is brought forward to show that the gene is intermediate in effect, independent from the allelic series for coat colour, autosomal in location, and productive of gross ocular anomalies in the homozygote, which also shows marked depigmentation of the coat and frequently deafness as well. In the simplex state the gene is therefore productive of ' physiological ' variations, whilst in the duplex state its effects are pathological.

Attention is drawn to somewhat similar occurrences in the great Dane, and to the possibility that a gene of this type is widely distributed over different species. The relationship of the appearances seen in the dog to the syndrome described by Waardenburg in man is discussed.

FRASER, A. S., SOBEY, S. & SPIER, C. C. (1953). **Mottled, a sex-modified lethal in the house mouse.**—*J. Genet.* **51,** 217-221. **3686**

The authors established two lines of mice in which off-white patches of hair were distributed unevenly throughout the coat, and described them as mottled and brindled, respectively. These two types were similar in that all

females were mottled, the mottled character was dominant over normal coat, and the condition was lethal for males.—R.M.

ANCEL, P. (1953). Les bases chimiques de la tératogenèse chez les animaux. [**Chemical causes of teratology in animals.**]—*Rev. Path. gén.* **53,** 976-1002. [English summary.] **3687**

Teratology may be produced in animals by administering certain chemicals to the embryo or by depriving the dam of essential nutrients. The author discussed the mechanism of chemical teratogenesis and the teratogenic effect of deficiency. He listed 55 references.

—W. R. BETT.

See also absts. **3411** (streptococcal metritis in mink); **3439** (*S. abortus-ovis* causing human abortion); **3447** (leptospiral abortion in sows); **3450** (tetanus antitoxin and glucose in the blood of cows before and after parturition); **3453** (*V. fetus* infection); **3498** (ovine enzootic abortion); **3581** (antibiotics and reproduction in swine); **3597-3598** (vitamin A deficiency in rabbits and reproduction); **3620** (abnormal development in chick embryos caused by metallic elements); **3708** (report, Australia).

ZOOTECHNY

MCDOWELL, R. E., LEE, D. H. K. & FOHRMAN, M. H. (1953). **The relationship of surface area to heat tolerance in Jerseys and Sindhi-Jersey (F_1) crossbred cows.**—*J. Anim. Sci.* **12,** 747-756. [Authors' summary modified.] **3688**

The authors measured the surface area on 20 adult Jersey and 20 adult Sindhi-Jersey crossbred cows with a surface integrator, the construction and use of which they described. The areas were compared with the body weights. Neither the ratio of surface area to body weight nor the ratio of surface area to the two-thirds power of body weight, showed a significant difference between the two groups.

In spite of the close similarily in proportional surface area, the heat tolerance of the two groups was markedly different. This indicates that differences in heat tolerance of animals such as these are not primarily due to differences in proportional surface area even though the presence of large dewlaps, etc., might suggest that such a difference in surface area would be found.

The relationship between surface area and body weight in these animals, and in animals of adult size reported elsewhere in the literature, is well enough expressed by a straight line. It is suggested that there is no advantage to be gained from the more complex exponential relationship introduced by using a fractional power of body weight when comparisons are to be made between adult animals.

MCDOWELL, R. E., MATTHEWS, C. A., LEE, D. H. K. & FOHRMAN, M. H. (1953). **Repeatability of an experimental heat tolerance test and the influence of season.**—*J. Anim. Sci.* **12,** 757-764. [Authors' summary slightly modified.] **3689**

Jersey and Sindhi-Jersey crossbred cows were subjected for six hours to a standard hot atmosphere (105°F., and vapour pressure 34 mm. Hg) at repeated intervals of two months or longer, and observations made on rectal temperature and respiratory rate. Between tests the animals were kept in the barn or on pasture under climatic conditions prevailing in Beltsville, Maryland.

The rectal temperature responses are found to vary markedly with the time of year, showing a maximum in February, and a smaller maximum in August, with a minimum in May-June.

Repeatability coefficients for the rectal temperature responses in heifers (8–22 months of age) remain fairly low until the responses are sorted into three seasonal groups: April-July (low); August-September and February-March combined (high); and October-January (intermediate). They then reach high and satisfactory levels.

The results are explained in terms of two sets of response to stress—yield or slip responses, and the compensatory responses—which are differentially affected by the seasonal conditions (hot, temperate, cold) under which the animals live between tests.

Repeatability coefficients for respiratory rate responses to the test hot atmosphere remain low, even after seasonal sorting.

KIBLER, H. H. & BRODY, S. (1953). **Environmental physiology and shelter engineering, with special reference to domestic animals. XXII. Influence of humidity on heat exchange and body temperature regulation in Jersey, Holstein, Brahman and Brown Swiss cattle.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 522. pp. 33. [Authors' summary modified.] **3690**

The authors presented data on the influence of low and high relative humidity at temperature levels of 12°, 40°, 75°, 85°, 95°, and 100°F. on heat production, and also on heat dissipation (respiratory and outer surface

evaporative cooling and, by computation, non-evaporative cooling), on rectal temp., on respiration and pulse rates and on pulmonary ventilation rates in Jersey, Holstein, Brown Swiss and zebu cattle. They showed that the level of humidity has no measurable effects at low temperatures, but begins to depress evaporative cooling and thereby increase body temp. at about 75°F. in European and 80°F. in the Indian cattle. The authors discussed the relations between humidity level (relative, absolute, etc.), environmental temperature, and thermal balance.

FLETCHER, J. L. & REID, G. R. (1953). **The effect of shearing on the reaction of lambs to high environmental temperature.**—*J. Anim. Sci.* **12,** 666-669. **3691**

Three groups of lambs were used—one shorn, one shorn only along the back, and a non-shorn control group. The shorn lambs were shown to have a significantly lower body temperature and respiration rate. No significant difference was demonstrable between the other two groups.—W. S. MARSHALL.

GEDDES, H. J. (1954). **Calf-rearing.** — *Aust. vet. J.* **30,** 77-79. **3692**

G. commented on growth rates, nipple feeding, limited supplies of skim milk and antibiotic feeding. He also discussed the use of portable calf pens and work on the chemical preservation of colostrum.—B. PANARETTO.

ALEXANDER, G. I. (1954). **Rearing dairy calves.** —*Aust. vet. J.* **30,** 68-77. **3693**

The author compared growth rates to nine months of age of male and female Australian Illawarra Shorthorn calves from four farms in Queensland, with those given by Ragsdale (1934). He reported on five trials examining the effects on growth rate and subsequent development of calves of (a) nipple feeding as compared with pail feeding, (b) feeding of limited quantities of whole milk together with a calf meal containing 20% crude protein, (c) feeding of limited quantities of skim milk, together with the calf meal, (d) feeding of dry calf meal as compared with gruel, and (e) feeding of an antibiotic supplement.

—B. PANARETTO.

DAYUS, C. V. (1953). **Animal production, and some related problems, in Southland. II.**—*N. Z. vet. J.* **1,** 115-122. **3694**

A 555% increase in the slaughtering of lambs for export over 25 years indicates the rate of expansion of animal production in Southland, New Zealand. D. gave an account of methods of feeding and management, with particular emphasis on disease conditions which occur in sheep and cattle.—W. S. MARSHALL.

KING, J. O. L. (1954). **Husbandry and its influence on the incidence of disease in animals.** —*Advanc. Sci.* **10,** 379-384. **3695**

K. discussed the extent to which domestic cattle, pigs, and poultry have departed from the wild state, the influence on them of adverse environment, and the systems of husbandry in common use.—R.M.

PHILLIPS, R. & HUGHES, L. E. (1952). **Some aspects of losses in farm animals.**—*Brit. vet. J.* **108,** 458-472; 109; 33-38. **3696**

Statistics from such sources as the returns of the Ministries of Agriculture and of Food, the Milk Marketing Board, artificial insemination centres, and Agricultural Economics Departments were analysed to give a picture of animal production and losses in the counties of Cardigan, Carmarthen and Pembroke (one and a quarter million acres). The records of 4 knackeries were consulted and an analysis made of the seasonal intake of various classes of livestock. Animal production in the region was highly seasonal, being high in summer and low in winter. Grading at the collecting centres, and the high proportion of entries into the knackeries in April showed that the general condition of the livestock was unsatisfactory. Production was low because the local growing and harvesting conditions were not good enough for the production of corn and fodder of the right quality. The authors concluded that until the level of winter feeding can be raised there is little point in encouraging the farmers to concentrate on improved breeding.

—C. C. BANNATYNE.

BATEMAN, J. K. (1954). **The attainment and maintenance of fitness in the racing greyhound.**—*Advanc. Sci.* **10,** 415-416. **3697**

A brief account of the rearing and training of racing greyhounds, forming part of a symposium on the physiology of athletic training held by the British Association for the Advancement of Science at Liverpool.—R.M.

KATIYAR, R. D. (1953). **Guinea-pig husbandry.** —*Indian vet. J.* **29,** 330-340. **3698**

A general note including some personal observations. Rearing g. pigs in pens instead of hutches increased the conception rate, reduced mortality, and produced healthier off-

spring. Outbreaks of *Salmonella* and *Pseudomonas* infections were encountered.

—R. N. Mohan.

Tanner, J. M. & Burt, A. W. A. (1954). **Physique in the infra-human mammalia : A factor analysis of body measurements of dairy cows.**—*J. Genet.* **52,** 36-51. [Authors' summary modified.] **3699**

The authors made 15 body measurements on 67 Dairy Shorthorn and 105 Ayrshire adult cows. They gave the means and standard deviations, with details of the differences between the breeds. The measurements were intercorrelated and factor analysed, each breed separately.

All correlations are positive, and a bipolar type of analysis yields in each instance a general size factor and three subsidiary factors. The general factor accounts for 40–50% of the total variance. Chest circumference has the highest saturation in it, and is by itself a rather good estimator of general size.

There is a well-marked bipolar factor for linearity of build in both breeds, similar in its saturations to the leptosomic factor seen in factor analyses of the human subject. It accounts for 5–10% of the variance. In Shorthorns it can be estimated adequately by subtracting chest width from height at withers; in Ayrshire a third term, length of trunk, is introduced.

A group factor analysis was also carried out; it yielded in both breeds a basic factor for body width and depth, and in the Ayrshires factors for breadth of pelvis and depth of body.

The authors compared these results in cattle with results in man and in rabbits, and with the occurrence of breeds of dogs and horses of differing degrees of linearity. They concluded that genes causing differences in linearity of body form are present in considerable numbers of mammalian species; and that they may have played a part in speciation as well as in the moulding of separate strains of domesticated animals.

Burris, M. J., Bogart, R. & Oliver, A. W. (1953). **Alteration of daily gain, feed efficiency and carcass characteristics in beef cattle with male hormones.**—*J. Anim. Sci.* **12,** 740-746. [Authors' summary and conclusions modified.] **3700**

The weekly i/m injection of testosterone at the rate of 1 mg./kg. body wt. resulted in an increase in rate of gain and a decrease in feed required per unit gain. Testosterone-treated heifers had a higher percentage of chuck than control heifers and testosterone-treated heifers and steers had a higher percentage of round and a lower percentage of loin than controls.

The weekly intramuscular injection of methyl androstenediol at the rate of 1 mg./kg. of body wt. had little or no effect on rate of gain or carcass characteristics.

Brownlee, A. (1954). **Play in domestic cattle in Britain : An analysis of its nature.**—*Brit. vet. J.* **110,** 48-68. [Author's summary modified.] **3701**

B. described the manifestations of play in domestic cattle and the conditions of its occurrence. He proposed the theory that play in cattle, instead of being, as Groos thought, manifestations of a number of instincts before they were actually required for serious purposes, is in fact one instinct with its own drive, releasers, emotion, consummatory phase and goal. The goal of play is not to be found in the animal's environment but is tissue-trophic and serves to exercise and thereby maintain tone and adequate vascularization of the play muscles and other structures involved in play behaviour.

A derived survival value of play is the familiarizing to the animal of certain items in its environment in relation to its play movements: play continues in an environment long after this familiarity has been established.

There is variation in the type of release to which individual cattle respond.

Sex and age modify the manifestations of play.

Rivalry, if it operates at all in play of cattle, is only a minor motive.

B. discussed whether the tendency during play for the behaviour pattern to switch in succession from one type to another should be interpreted as being due to diffusion of stimuli from one centre to another within the c.n.s., or whether the releaser of play is a " gestalt " and all the play items in that " gestalt " become valent together.

The tendency for a bovine animal to play is influenced by its state of nutrition.

He discussed the classification of mounting by bullocks and by dioestrous and pregnant females and gave reasons for putting this behaviour under the rubric of play.

He suggested the term ' para-activity ' for play to indicate that, although play resembles in its behaviour the patterns of combat, self-defence, flight, and sex mounting, it is in fact an entirely separate phenomenon.

TECHNIQUE AND APPARATUS

SNYDER, M. L. (1954). **Paper discs containing entire culture medium for the differentiation of bacteria.** — *J. Path. Bact.* **67,** 217-226. [Abst. from author's summary.] **3702**

S. described a technique by which paper discs can be impregnated with culture medium, dried and stored. These dried discs, when placed on an agar base previously inoculated with bacteria, give reactions which permit cultural differentiation of many bacterial types. He discussed the advantages of these discs over conventional media in respect of simplicity, flexibility and economy of media and storage space.

FREIMAN, D. G. (1954). **Organic chelating agent in the demineralization of bone for histochemical study of alkaline phosphatase.**—*Amer. J. clin. Path.* **24,** 227-231. [Author's summary modified.] **3703**

F. dscribed a method for preparing bone for histochemical study by means of the organic chelating [*i.e.,* forming non-ionic, non-polar complexes with metallic ions] agent ethylenediamine tetra-acetic acid, that permits demineralization without destruction of alkaline phosphatase activity. The method is simpler and more convenient than those previously in use and permits excellent preservation of enzyme activity for histochemical study. He described the localization of alkaline phosphatase in 6 specimens of young human bone.

ELLERBROOK, L. D. & DAVIS, J. H. (1954). **Effect of traces of copper on hemoglobin determination. A potential source of error.**—*Amer. J. clin. Path.* **24,** 607-611. [Authors' summary modified.] **3704**

The absorption of light of wavelength 500 mμ by oxyhaemoglobin (oxygenated normal blood) diluted with copper-free 0·075 N NH_4OH or 0·1% Na_2CO_3 decreased no more than 1 to 2% in 18 hours, when measured in a Coleman Jr. Spectrophotometer at about 25°C. The presence of minute amounts of copper in distilled water or other diluents employed in photometric oxyhaemoglobin determinations may lead to serious error, for oxyhaemoglobin then appears to be rather rapidly converted to methaemoglobin in alkaline solution. The presence of as little as 0·3 mg. of copper per l. of 0·075 N NH_4OH may easily result in absorbance values about 10% too low if the photometric reading is made an hour after the blood solution is alkalinized. The concentration of 2·4 mg. per l. found in a sample of distilled water gave haemoglobin values about 10% too low even when the readings were made seconds after the addition of the base. The readings made 5 min. later gave values nearly 20% too low.

Such " fading " errors due to the presence of copper (and perhaps to other causes) may be minimized by making the original blood dilution in pure water and alkalinizing the solution just before making the photometric measurement.

HOERLEIN, B. F. (1953). **Various contrast mediums in canine myelography.**—*J. Amer. vet. med. Ass.* **123,** 311-314. **3705**

Tests were carried out from a radiological, clinical and pathological viewpoint on five contrast media in myelographic diagnostic procedures. None superseded " pantopaque " (ethyl iodophenylundecylate) which H. states is still the most satisfactory agent.—D. POYNTER.

See also abst. **3443** (paper chromatography in the serological diagnosis of brucellosis).

MISCELLANEOUS

GATES, D. W. (1953). **The technique employed in splenectomy of bovine animals.**—*J. Amer. vet. med. Ass.* **122,** 94-98. **3706**

G. described his technique which has been perfected in the course of over 200 splenectomies in cattle. General anaesthesia is obtained by 40% chloral hydrate in intravenous dosage of 0·15 ml. per lb. body wt. The spleen is approached through a vertical incision a few inches behind the left last rib; the spleen is drawn to the outside and amputated in the usual way.

Only four animals have died from the effects of the operation, two from haemorrhage and two from chloral hydrate poisoning.

—J. EDWARDS.

ROSS, D. N. (1954). **Venous cooling. A new method of cooling the blood-stream.**—*Lancet.* **266,** 1108-1109. [Author's summary modified.] **3707**

R. described a new method of cooling the blood-stream for surgical purposes. Blood is

withdrawn from the superior vena cava, cooled, and pumped back into the saphenous vein on the same side. This provides rapid and uniform cooling of the tissues and aims at avoiding the disadvantages of arterial cooling. The method was applied successfully in 130 dogs.

REPORTS

AUSTRALIA. (1952). **Fourth Annual Report of the Commonwealth Scientific and Industrial Research Organization for the year ending 30th June, 1952.** pp. 173. Canberra: L. F. Johnston, Commonwealth Govt. Printer. 10s. **3708**

Neither aureomycin nor furacin (5-nitro-2 furaldehyde semicarbazone) was effective against staphylococcal MASTITIS. The potassium salt of penicillin G was irritant and caused fibrin clots. Vaccination of sheep against CASEOUS LYMPHADENITIS reduced the incidence to about half that in controls. Sheep placed in a rested pasture showed an intermediate incidence.

SHEATH ROT (BALANITIS) in wethers grazing subterranean clover pastures increased from autumn, through winter, reaching a maximum in spring. Testosterone implants or removal to a pasture where clover was not dominant reduced the incidence.

Cattle challenged three years after intracaudal vaccination with Strain 19 were resistant to BRUCELLOSIS.

Treatment of FOOT ROT in sheep with sodium sulphamethazine, alone or with procaine penicillin, was not successful. Footbaths of cetyl-trimethyl-ammoniumbromide were ineffective.

Growth requirements of the BOVINE CONTAGIOUS PLEURO-PNEUMONIA organism are complex. Serum, besides supplying growth factors, appears to be necessary for neutralization of growth-inhibitors present in some media. After two years' storage at room temp. lyophilized vaccine produced satisfactory titres, but challenge infections have yet to be given. Calves from 5 to 7 months old did not develop tail reactions or arthritis when vaccinated and their serological responses were poor. A blood test has been developed for use in the field.

QUEENSLAND ITCH of horses is an allergic dermatitis caused by bites of the sandfly (*Culicoides* sp.).

Numerous compounds were tested for insecticidal effects against *Boophilus microplus*. Dieldrin was one of the more promising compounds; " menthachlor " (chlorinated phellandrene) was also of value. A strain of tick has developed in the field which can survive concentrations of B.H.C. 200 times normal, and which is resistant to toxaphene and slightly resistant to D.D.T.

Observations on stabled cattle showed that there was a peak drop of fully engorged females between 6 and 10 a.m. If this occurs in the field it may lead to heavy local aggregations of larvae.

The eggs of *B. microplus, Haemaphysalis bispinosa, Ixodes holocyclus, Amblyomma triguttatum,* and *Rhipicephalus sanguineus* all contained " tick toxins ".

Studies on helminth parasites of cattle continued. *Bunostomum phlebotomum* can survive in regions with a mean monthly minimum temperature as low as 44°F. and mean maximum of 68°F., but not where the mean annual rainfall is 25 in. or less. Infestations with *Cooperia oncophora* and *Nematodirus* spp. reach maximum levels in winter and early spring when calves are 3–4 months old. *C. oncophora* persists for some months but *Nematodirus* spp. seldom persist beyond 6 months of age. Both occur in cooler regions.

A soln. of 5 to 10% sodium bicarbonate caused reflex closure of the oesophageal groove in 90% of young cattle. Blood glucose was measured to determine whether a drench had passed into the rumen or the abomasum. An abomasal inj. of glucose resulted in a maximum blood glucose level in 60 to 120 min.

Anatomical differences between the larvae and the females of *Haemonchus contortus* from cattle and sheep indicate that they may be distinct species. A mite of the genus *Oribatula* was found to be the intermediate host of *Moniezia benedeni*.

Methods for the differentiation of the infective larvae of the common nematode parasites of cattle were devised.

The common intermediate host of *Fasciola hepatica* in Australia should be called *Simlymnaea subaquatilis*. The life-cycle of *Paramphistomum ichikawai* in the intermediate host is much shorter than that of *Ceylonocotyle streptocoelium*. Snails infected with a single miracidium produced from 649 to 1,748 cercariae during their life and were still infested when they died. There is a rhythmic production of eggs by the mature flukes with periods when no eggs are present.

The high incidence of *Echinococcus* cysts

in cattle in coastal Queensland is not dependent on the presence of *E. granulosus* in dogs but is associated with the high incidence in the dingo (*Canis dingo*). The life-cycle is maintained by the dingo-wallaby association, most of the cysts in cattle being sterile.

Phenothiazine must be finely ground if a high degree of efficiency is to be obtained in sheep. A sample with 98% of particles measuring 46 to 76 μ left large residual infestations with *H. contortus* even at a dose rate of 20 g. A sample in which 90% of particles measured 10 μ or less was highly efficient against *H. contortus, Trichostrongylus* spp. and *Oesophagostomum columbianum*. A short oesophageal tube has been developed for the administration of phenothiazine. It enables speedy administration and eliminates staining of the fleece. Doses of 2 to 8 ml. carbon tetrachloride injected into the rumen or the abomasum were ineffective against *Trichostrongylus* spp. In acute FASCIOLIASIS increased doses of this drug will kill immature flukes in the liver. It appeared that a 1 ml. dose kills flukes over 56–62 days old; a 3 ml. dose kills flukes over 37–52 days old, and a 5 ml. dose kills those 17–37 days old. Carbon tetrachloride containing up to 0·06% carbon bisulphide or 0·5% free sulphur did not produce ill-effects in sheep in 5 ml. doses.

Of over 70 compounds, including diphenylamines, quinones, diamines, ethers, carbamates and some relatively insoluble arsenicals tested by rumen injection against *H. contortus*, only a few showed slight anthelmintic effects.

In initial infestations with *Trichostrongylus* spp. nutrition did not appear to influence the establishment or the duration of the infestation, but sheep on the low plane of nutrition developed somewhat heavier infestations. If no rise in blood histamine follows the administration of an appropriately timed dose of larvae, " self-cure " is not manifested. The phenomenon occurs with *Trichostrongylus* spp. as well as with *H. contortus*. Administration of *H. contortus* larvae to sheep infested with *Trichostrongylus* spp. will induce " self-cure ", but not *vice versa*, and there is no rise in blood histamine. Larvae of *Ostertagia* spp. which inhabit the abomasum will induce " self-cure " of HAEMONCHOSIS. Sheep slaughtered on the day of the rise in blood histamine showed oedematous changes in the mucosa, confined to the abomasum in cases of HAEMONCHOSIS and to the small intestine in cases of TRICHOSTRONGYLOSIS. I/d inj. of 1:10 diln. of *H. contortus* boiled antigen gives marked reactions in certain animals. Worm free lambs and infested sheep which do not manifest " self-cure " do not react, but in infested sheep which manifest " self-cure " a large oedematous reaction occurs within an hour. Some animals develop strong resistance to *H. contortus* with persistent skin sensitivity.

The effects of grazing oats on *Oe. columbianum* were studied further; there was no loss of worms until the sheep had been grazing the oat crop for 2 to 4 weeks. In sheep dosed with *Oe. columbianum* larvae from 4 to 7 weeks before grazing on oats, heavy infestation developed, but when larvae were dosed to sheep after they had been grazing the oats for 3 to 6 weeks light infestations developed. In other trials elimination of worms was rapid after grazing began and was associated with softening of the faeces and a lowering of their pH. The sheep did not gain in weight during this trial.

In sheep which repeatedly manifest " self-cure " when dosed periodically with larvae red cell counts may remain low although there are few eggs in the faeces. It is thought that the presence of immature worms may be responsible and that they may remain immature for long periods in sheep which are resistant.

The epidemiology and control of *Ostertagia* spp. is complicated by the histotropic phase in the life-cycle in which the larvae may remain in the mucosa of the abomasum for some time. Larvae of this parasite developed better at temperatures lower than those commonly used for larval cultures (27°C.).

Nematodirus abnormalis was recorded for the first time in Australia in sheep. An undescribed trichostrongylid having affinities with *Trichostrongylus* and *Asymmetrichostrongylus* (recorded from marsupials) was found in sheep. An index has been prepared for the genus *Trichostrongylus*.

The distribution of nematodes in the small intestine of sheep did not differ in heavy and in light infestations and was not disturbed by administration of anthelmintics. Erratic distribution is said to suggest that a parasite is in an abnormal host. The distribution of *T. retortaeformis* in sheep and of *T. colubriformis* in the rabbit supported this contention.

Plasma volumes of sheep infested with *T. colubriformis* and of controls were measured by the Evans blue-dye technique. In infested sheep, even when free from clin. symptoms, there was a fall in total blood, but not plasma, volume, due to a fall in packed-cell volume. The red cell count fell from 11 to 6 million/cu. mm. and Hb from 9·1 to 6·1 g./100 ml.

After dosing phenothiazine to rats and

chickens only the drug itself was found in the gut contents. This suggests that phenothiazine itself, rather than a derivative, is the anthelmintic agent.

A number of substituted phenothiazines and diphenylamines have been tested as anthelmintics against *Syphacia* in mice and the results related to their oxidation potentials. There is a narrow range of activity with phenothiazine, phenoxazine and *p*-ditolylamine (4,4′dimethyl diphenylamine) near the peak of the curve.

A high proportion of feral pigs, large numbers of which are captured and fattened for market, were found to be infested with a sparganum which developed into *Diphyllobothrium erinacei* when fed to dogs and cats.

Extensive nutritional studies with sheep included carbohydrate metabolism during fasting in the later stages of pregnancy which suggested a breakdown in the Krebs tricarboxylic acid cycle.

Studies on drought feeding of sheep continued. Mature ewes, with satisfactory vitamin A reserves, lambed and lactated satisfactorily when fed on a cereal diet from the time they were mated. When maintained on the ration and mated a second time, they conceived normally but most of the lambs were born dead or died within a few days of birth. Ewes which reared lambs had little milk. Many deaths occurred in young sheep maintained on cereal rations for long periods (7 months) unless they were given a large dose of vitamin A when the trials began.

In poisoning of sheep fed large quantities of wheat the occurrence of acidosis and lactacidaemia do not necessarily follow severe fall in blood volume. Further work on the value of aureomycin in preventing toxicity of wheat showed the crude product "Aurofac" (Lederle) at 11·5 g./kg. was also effective. Ground oats, barley and maize were administered to sheep in amounts calculated, on assumed starch content, to be equiv. to the lethal amount of wheat. All sheep developed low ruminal pH and high lactate and high blood lactate, but the extent of acidosis was variable.

The minimum amount of cobalt required for the complete nutrition of sheep is between 0·07 and 0·08 mg.Co/day. Thus a fodder containing between 0·08 and 1μg.Co/g. dry wt. is about the lowest limit. Dosing once every 4 weeks with 140 mg. Co by mouth will maintain Merino ewes in normal health while grazing on acutely deficient pastures. Topdressing pastures with cobalt is not a satisfactory means of control of Cobalt Deficiency in the Robe area.

An excessive amount of molybdenum (50–100 mg. Mo/day as molybdate) dosed to sheep grazing copper deficient pastures tended to decrease the depletion of copper from the liver, to maintain the concentration in the blood, and, paradoxically, to accentuate the symptoms of Copper Deficiency. In sheep on a pasture which is not deficient in copper, administration of molybdenum increased the rate of depletion of the copper reserves when the copper content of the pastures was insufficient to maintain the sheep in positive copper balance, and decreased the rate at which copper was laid down in the liver when the conc. of copper available from the pastures was in excess of the animal's needs. Dosing sheep in this area with 50 mg. Mo/day over a period of 3 years had no significant effect on body wt. and wool production. In lab. trials there were differences in the interaction of copper and molybdenum according to the nature of the ration. On a ration of chaffed cereal hay and crushed wheat sheep dosed with molybdenum lost copper steadily. On a ration of chaffed cereal hay and lucerne the copper status improved. Sheep grazing pastures topdressed with copper some 10–12 years previously maintained a stable level, considered barely adequate, in the liver at 55 μg. Cu/dry wt. On the same pasture sheep supplemented with 5 mg. Cu/day maintained liver levels of 510 μg.

Further outbreaks of the demyelinating disease "Phalaris Staggers" occurred in sheep grazing *Phalaris tuberosa* pastures. Administration of cobalt prevents the disease.

Ewes on clover-dominant pastures differ from small experimental animals in that they develop a persistent Infertility after a course of oestrogen administration whereas the small lab. animals quickly recovered. A method for chemical analysis of the pro-oestrogen, genistein, has been developed.

"Toxaemic Jaundice" in sheep is a complex of chronic Copper Poisoning and poisoning by *Heliotropium europaeum*. The copper content of the liver increased more when sheep grazed on subterranean clover pastures topdressed with sulphur to make the soil acid than when grazed on pastures topdressed with lime or left untreated. Sheep grazing natural pastures had liver copper values about half of those of sheep on clover pastures. Field observations showed that Merino sheep do not graze *H. europaeum* if other plants are available, whereas the common British breeds and their crosses with the Merino graze the plant readily and develop the disease. If Merino sheep are forced to eat the plant they also develop the disease. The alkaloids derived

from the plant have produced toxic effects in rats, including a hepatitis resembling that in sheep.

The tremendous spread of MYXOMATOSIS in rabbits during the summer of 1951-52 was associated with transmission by mosquitoes chiefly *Anopheles annulipes*. Immunity was being studied.—H. McL. GORDON.

UNION OF SOUTH AFRICA. (1953). **City of Johannesburg. Report of Director, Abattoir and Live Stock Market Department for the period 1st July, 1952, to 30th June, 1953.** [ROBINSON, M. C.] pp. 18. Johannesburg: Radford, Adlington Ltd. **3709**

During the year some 1,100,000 animals were slaughtered in the abattoir, or about 13% of the slaughtering of the whole Union. Of these, about 14% came from territories adjacent to the Union, principally South West Africa, and the remainder from within the Union itself. Condemnations were negligible. The pig slaughter house has been modernized and electric stunning, and automatic dehairing and singeing are now the rule. Other activities included supervision of the Livestock Market, handling some 30,000 head, inspection of dairy herds, preventive inoculations and finally supervision of a zoo containing 1,800 specimens.—R. MACGREGOR.

SWEDEN. (1951). Veterinärvård vid armén år 1949. **[Report of the Swedish Army Veterinary Service 1949.]** pp. 18. Sveriges Officiella Statistik Hälso- och Sjukvård. Stockholm: P. A. Norstedt & Söner. **3710**

This annual report consists of a detailed statistical survey based upon 5,035 horses on the strength of the army, including 629 remounts, and of 901 army dogs. The mean incidence of sickness among horses was 6·8%. Joint affections accounted for nearly a quarter of these and wounds, contusions and other accidents for another quarter.

An INFECTIOUS BRONCHIAL CATARRH [? Hoppegarten cough] with a cough as the only symptom and probably caused by a virus occurred in a stud unit and spread rapidly. It was probably introduced by horses that had taken part in a tournament in Holland. INFECTIOUS BRONCHO-PNEUMONIA occurred in a remount depot, probably introduced by trotting horses. There were a few isolated cases of LEPTOSPIROSIS and one case of TB. in a remount.

Among dogs 22% of the cases treated were for wounds. Vaccination against DISTEMPER was undertaken and only 11 cases of the disease occurred of which 6 were fatal, although it was widespread in civilian dogs.

The inspection of army food supplies was undertaken by veterinarians and experience showed that this work should be increasingly entrusted to them.—F.E.W.

BOOK REVIEWS

FISCHER, R. B. [Demonstrator in Biochemistry, University of Oxford.] (1954). **Protein metabolism.** pp. ix + 198. London: Methuen & Co, Ltd. 11s. 6d. **3711**

This volume follows the previous pattern of the publisher's monographs on biochemical subjects. The subject of protein metabolism is dealt with in a clear and concise manner, without a wealth of intimate details and references, which so often cause confusion when attempting to introduce a specialised topic. The book is divided into seven chapters:—digestion and absorption of protein; overall picture of protein metabolism; deamination, transamination and urea synthesis; metabolism of amino-acids; isotopes in the study of protein metabolism; metabolic and endocrine interactions; concluding with a discussion on the nutritive value of proteins.—D. S. PAPWORTH.

PRATT, R. [Professor of Pharmacognosy and Plant Physiology, University of California College of Pharmacy; Consultant on Antibiotics.] & DUFRENOY, J. [Research Associate in Antibiotics, University of California College of Pharmacy.] (1953). **Antibiotics.** pp. xv + 398. Philadelphia, London & Montreal: J. B. Lippincott Co. 2nd Edit. 60s. **3712**

The subject is covered under four main headings:— Fundamental aspects, Industrial aspects, Applied aspects, and Modification of biologic and social systems. The authors have managed to include an amazing amount of information on antibiotics in the 300 pages of text. Numerous tables and diagrams are included which may account for the high price. Why a whole page picture should be given over to the injection of antibiotics into the teat canal of a cow is not clear, unless it is intended to assist farmers to treat their own cows. The method shown is not good bacteriologically and is not recommended in Great Britain.

Most people interested in antibiotics will find information of value to them. A particu-

larly useful feature is a bibliography at the end of each chapter given as " Suggested Reading ". Veterinary uses are included in the chapter on antibiotics in agriculture; most of the essential information is given.—G. SLAVIN.

—. (1953). **Antibiotics annual 1953-54. Proceedings of the Symposium on Antibiotics, October 28, 29, and 30, 1953, Washington, D.C. (Sponsored by U.S. Department of Health, Education, and Welfare, Food and Drug Administration, Division of Antibiotics. In collaboration with the Journal Antibiotics & Chemotherapy.)** [Edited by: WELCH, H. & MARTÍ-IBÁÑEZ, F.] pp. viii+632. New York: Medical Encyclopedia, Inc. [Royal 8vo.] **3713**

This book covers most of the currently available antibiotics and most aspects of their use. The bewildering range of names complicated by the numerous patented names is seen, on closer examination, to be less frightening than at first sight. The number of generally useful antibiotics is seen to be still quite small. The papers cover a wide range including use in human beings for a variety of infections, veterinary applications and a number of papers on a subject of increasing importance, antibiotics in feeding stuffs. These last give tissue levels after prolonged feeding and discuss effects on possible pathogens exposed to their action during this time. Much information useful in the veterinary field can be extracted from the papers on human use. The general warnings against indiscriminate use do not apply so much to farm animals because of the high cost of antibiotics but care, and a knowledge of their pharmacology, are required to get the best results at lowest cost. A great deal of this pharmacological knowledge is available in this symposium.—G. SLAVIN.

ROBINSON, F. A. (1953). **Antibiotics**. pp. viii +132. London: Sir Isaac Pitman & Sons, Ltd. 15s. **3714**

This useful volume comprising nine chapters, summarizes the essential facts about antibiotics, with a minimum of detail. Material has been selected from the vast amount available to compile a balanced picture of the whole field, the subject matter being of value to degree students and others, especially those interested in the biochemistry, chemistry and bacteriology of these substances. Penicillin, other mould antibiotics, other antibiotics from actinomycetes, and bacterial antibiotics are dealt with. There is a bibliography and an index.

—E. MARSH JONES.

COLLIER, H. O. J. (1954). **Chemotherapy of infections.** pp. xvi+248. London: Chapman & Hall, Ltd. 18s. **3715**

This book is one of a series on " Frontiers of Science " which the publishers are producing with the object of filling the " gap between elementary expositions and specialist textbooks ", and it is stated that the authors of the books in this series are all actively engaged in research on their respective subjects. In his introduction the author explains that he has gradually raised the technical level of the subject matter in the successive chapters after the manner of Euclid with his theorems.

The range of the book is chemotherapy in the wide sense, including antibiotic therapy. Actually the sulphonamides and antibiotics provide about 75% of the subject matter and other modern drugs the remainder—a sign that modern specific chemotherapy directed against micro-organisms is of very recent origin.

An understanding of the subject matter presupposes a good educational background extending over organic chemistry. Yet even readers who are thoroughly acquainted with biochemistry will be likely to come up gasping at the end of the first chapter, so hot is the author's pace. The immense amount of data on the subject has been handled with great skill and the necessarily short chapters are packed with interesting and instructive information which is remarkably up-to-date. Lists of references for further reading conclude each chapter.

Veterinary aspects of chemotherapy are only featured for recently discovered drugs which happen to be used in treatment of animal diseases—*e.g.* certain trypanocides, and nothing is said about the veterinary uses of sulphonamides or antibiotics, about which the tale is purely " medical ".

In the chapter on drug-resistance the reader is left to imagine that this is a troublesome problem with penicillin. Such is not the case, for the only bacteria known to have this property are certain types of staphylococci and they are not of general incidence.

Altogether the book fulfils its aims very well and can be highly recommended to its potential public.—J. EDWARDS.

CULPEPER, N. (1953). **The complete herbal.** pp. x+603. Manchester: Imperial Chemical (Pharmaceuticals), Ltd. Reprinted from original Edit. of 1653. 42s. **3716**

This Herbal, reprinted from the original

edition of 1653, is the most celebrated of Culpeper's works, " being an astrologo-physical discourse of the common herbs of the nation; containing a complete Method or Practice of Physic, whereby a Man may preserve his Body in Health, or cure himself when sick, with such things only as grow in England, they being most fit for English Constitutions ". The author criticized the current (1653) literature on the nature of herbs, and by his skill and industry produced this enlarged edition which remains a lasting monument of his life's work. It is a handsomely produced volume. There are 16 plates in colour of some 80 herbs, a general index and a list of principal diseases.

—E. Marsh Jones.

Scheer, B. T. [Associate Professor of Biology, University of Oregon.] (1953). **General physiology.** pp. x+613. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 56s. **3717**

The aim in producing this textbook on general physiology is to provide students who wish to specialise in biology with an up-to-date picture of the vital functions as well as to present a basis for understanding the basic problems of physiology. Emphasis is laid, therefore, on the physico-chemical and chemical dynamics of life which are considered in detail. Energy transformation in cells and organisms is then dealt with and finally the development and integration of the organism is discussed.

The tendency for general physiology to concern itself only with the cell has been resisted by giving consideration to tissues and organs as a whole as well as to such questions as cancer, age and life span and the higher mental funtions.

This book may be recommended not only to students of pure physiology but also to students of veterinary medicine particularly for the clear account it gives of the physico-chemical factors affecting living cells and the enzyme reactions which catalyse chemical reactions associated with the living cell.

—J. A. Nicholson.

Soula, L.-C. [Professeur de Physiologie à la Faculté de Médecine de Toulouse.] (1953). Précis de physiologie. [**Précis of physiology.**] pp. 1100. Paris: Masson et Cie. 2nd Edit. Fr. 2900 & 3500. **3718**

A second edition of the author's précis of physiology is to be welcomed for it is a book which deals in a straightforward manner with the essential aspects of physiology necessary for a proper understanding of medicine without going into long theoretical considerations. Emphasis is laid on the formation, adaptation and functional integration of the different organs as a result of the nervous, humoral and chemical control mechanisms and thus the essential unity of the body is brought out. The text has been brought up to date and the newer biochemical findings are considered.

—J. A. Nicholson.

Koch, F. C. [Late Frank P. Hixon Distinguished Service Professor Emeritus of Biochemistry, University of Chicago.] & Hanke, M. E. [Associate Professor of Biochemistry, University of Chicago.] (1953). **Practical methods in biochemistry.** pp. ix+537. London: Baillière, Tindall & Cox, Ltd. 6th Edit. 38s. 6d. **3719**

This book may be heartily recommended to those veterinary workers who wish to have a good reference book for general laboratory procedures of a biochemical nature. It contains a minimum of theoretical details, and really gets down to the job of describing techniques in a clear concise manner. The reviewer cannot recall reading a better descriptive chapter on how to use the Van Slyke apparatus and work out results, than is contained in this book. This is unfortunately spoilt by omission of any mention of the Warburg apparatus. A few of the clinical tests for blood and urine rather savour of the nineteenth century medical school, and the index is rather inadequate (for example chromatography and ion-exchange resins are omitted), but these are small faults, considering the general value and high standard maintained throughout. The book concludes with an invaluable appendix of general laboratory instructions, which includes a list of common and not-so-common reagents, and how to prepare them.—D. S. Papworth.

—. (1954). **Advances in cancer research. Vol. II.** [Edited by: Greenstein, J. P. & Haddow, A.] pp. xi+530. New York: Academic Press, Inc. $11. **3720**

[For review of volume 1, see *V.B.* **24,** 962.] In this volume, the subjects reviewed, and authors concerned, are: The reactions of carcinogens with macromolecules (P. Alexander); Chemical constitution and carcinogenic activity (G. M. Badger); Carcinogenesis and tumour pathogenesis (I. Berenblum); Ionizing radiations and cancer (A. M. Brues); Survival and preservation of tumours in the frozen state (J. Craigie); Energy and nitrogen metabolism in cancer (L. D. Fenninger and G. B. Mider); Some aspects of the clinical use of nitrogen

mustards (C. T. Clopp and J. C. Bateman); Genetic studies in experimental cancer (L. W. Law); The rôle of viruses in the production of cancer (C. Oberling and M. Guérin); Experimental cancer chemotherapy (C. C. Stock).

The book is an invaluable means for keeping workers in one field of cancer research in touch with developments in other fields. Many points of wider interest to veterinary pathologists will be found particularly in the articles by Berenblum and by Oberling and Guérin.

—E. COTCHIN.

FINNEY, D. J. (1952). **Statistical method in biological assay.** pp. xix+661. London: Charles Griffin & Co., Ltd. 68s. **3721**

This must undoubtedly become the standard text for those concerned with biological assay. It is clearly written in a language that can be followed by any biologist whose work requires him to study the subject; the author also provides enough of the theoretical background to demonstrate the principles to a mathematician. There are plenty of arithmetical examples and a full set of the statistical tables required in working out the various types of assay described. There are 18 pages of bibliography. The general standard of the text is first class, the only error of any consequence noted being in the Glossary of symbols, where g is defined as $t^2s^2V(b)/b^2$ instead of $t^2V(b)/b^2$.

The main emphasis is on parallel-line and slope-ratio assays, though the less useful types of assay are also given due attention. The different types of design are fully treated, each with an exposition of its appropriate analysis. There is much helpful and sound advice on the interpretation of results and on many of the practical details that come into the planning of an assay—for example, the choice of doses, and of the interval between them, numbers required for a given accuracy, etc.

This is in fact a book to be thoroughly recommended.—F. B. LEECH.

ANON. (1954). Gli Istituti Zooprofilattici Sperimentali e l'Istituto Sperimentale Italiano "Lazzaro Spallanzani". **[Italian veterinary research institutes. An account of their work.]** pp. xiii+376. Rome: Alto Commissariato per l'Igiene e la Sanità Pubblica. **3722**

An account of the ten regional research institutes in Italy and the "L. Spallanzani" Institute at Milan. History, design, and work (including the production of vaccines) of each laboratory is described and illustrated by many excellent photographs. There are lists of personnel, and of works published by members of the institutes. The earliest institute was opened in Milan in 1907, and the most recent in Teremo in 1941. Construction and equipment of the laboratories appears to be of a high standard. The book is printed on good paper, and the matter is well arranged. There are English, French, German and Spanish summaries.

—R.M.

BARNETT, A. J. G. [Lecturer in Agricultural Biochemistry, Department of Biological Chemistry, University of Aberdeen.] (1954). **Silage fermentation.** pp. x+208. London: Butterworths Scientific Publications; New York: Academic Press Inc. [Demy 8vo.] 27s. 6d. **3723**

The purpose of this little book is to acquaint students of agriculture with the value, characteristics, use and methods of production of silage. There are 9 chapters dealing with the silage process, the use of acids and other additives in silage making, types of silos, losses in the ensilage process, formation of lactic acid in silage fermentation, formation of the lower fatty acids, amino acids and volatile bases in silage fermentation, analysis of field and laboratory silage, special techniques of analysis and digestibility and nutritive value of silage. After each chapter there is a list of references. There are 52 illustrations, 55 tables and a subject index. The book is well produced.

—E.G.

ANON. (1953). **National Manpower Council. A policy for scientific and professional manpower. A statement by the Council with facts and issues prepared by the research staff.** pp. xix+263. New York: Columbia University Press. (London: Geoffrey Cumberlege, Oxford University Press.) 30s. **3724**

This book will help to create an informed public opinion in the U.S.A. about present and potential shortages of scientific and professional manpower, and about policies which government, industry, educational institutions and the professions themselves might follow in meeting these shortages. The National Manpower Council was established in 1951 under a grant from the Ford Foundation "to study significant manpower problems in this period of crisis, and to contribute to the improved development and utilization of the human resources" [in the U.S.A.].

The book begins with a summary of the Council's recommendations, which are directed towards the development of more reliable information about the country's human resources,

the strengthening of institutions concerned with educating scientific and professional workers, increasing the flow of students through these institutions, and improving the utilization of the available trained personnel. A statement by the Council follows, elaborating these recommendations, and the bulk of the book is concerned with subjects such as the growth of the professions, the factors which influence students in choosing a professional career, the size of the potential reserve of people able to profit by specialized training, the impact of research and development projects, and the nature and estimation of manpower shortages. Four particular professional groups—engineers, physicists, physicians and teachers—are then considered at length. The book usefully stimulates thought on a problem which is of course not confined to the U.S.A.—E. COTCHIN.

—. (1953). **The Faber medical dictionary.** [Edited by: WAKELEY, C.] pp. vii+471. London: Faber & Faber, Ltd. [Post 4to] 45s. **3725**

This medical dictionary which defines concisely some 24,000 main terms is the product of collaboration between numerous experts under the general editorship of Sir Cecil Wakeley, President of the Royal College of Surgeons. It was originally hoped that publication might coincide as nearly as possible with the inauguration of the National Health Service, but this was found impossible and as the aim was to make the dictionary both comprehensive and up to date it has gained by the delay. Care was taken to include the names of new pharmaceutical preparations and to exclude unnecessary symbols. It is excellently printed on good quality paper and well bound. —F.E.W.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

AUSTONI, M. (1953). Le leptospirosi. [***Leptospira* infection.**] pp. 715. Turin: Edizioni Minerva Medica. 2nd Edit. L. 5000.

BARNES, J. M. (1953). **Toxic hazards of certain pesticides to man.** pp. 129. Geneva: World Health Organization. Monograph Series No. 16. 7s. 6d. $1.50 & Swiss Fr. 6. [In English.]

BESSIS, M. (1954). Traité de cytologie sanguine. **[Monograph on cytology of blood cells.]** pp. 588. Paris: Masson et Cie. Fr. 6000 & 6800.

BROWN, D. (1954). **Methods of surveying and measuring vegetation.** pp. xv+223. Farnham Royal: Commonwealth Agricultural Bureaux. Bulletin No. 42 of the Commonwealth Bureau of Pastures and Field Crops, Hurley, Berks. 25s.

BUCHNER, P. (1953). Endosymbiose der Tiere mit pflanzlichen Mikroorganismen. **[Relationships between animals and their endosymbiotic microflora.]** pp. 771. Basle Stuttgart: Verlag Birkhäuser. Swiss Fr. 62.40 or 66.50. DM 62.40 or 66.50.

GREENSTEIN, J. P. (1954). **Biochemistry of cancer.** pp. xiii+653. New York: Academic Press Inc. 2nd Edit. $12.00.

KÜST, D. & SCHAETZ, F. (1954). Die Besamung beim Rind. Leitfaden für die tierärztliche Praxis. **[Artificial insemination of cattle.]** pp. viii+149. Stuttgart: Ferdinand Enke. DM 17.50 & 19.50.

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ERRATA

V.B. **24**, abst. 2884. In line 5, for "July 1947", please read "July 1951". The flock concerned were mainly Merinos, but they were all pure-bred.

The list of abstract numbers given in the October issue should read: 2609, 2707, 2713, 2762, 2776, 2777, 2784, 2785 and 3053.

ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals* published in the years 1900-1950, 3rd Edit. (1952). London: Butterworths Scientific Publications.

List of Abbreviations

A.I.	— artificial insemination
ant.	— anterior
A.P.F.	— animal protein factor
approx.	— approximately
aq.	— aqueous
av.	— average
B.A.L.	— British anti Lewisite (2,3 dimercaptopropanol)
b.p.	— boiling point
c.f.	— complement fixation
clin.	— clinical
coeff.	— coefficient
conc.	— concentration
c.s.f.	— cerebrospinal fluid
diam.	— diameter
dil.	— dilute(d)
diln.	— dilution
E.I.A.	— equine infectious anaemia
equiv.	— equivalent
ft.	— foot (feet) [measurement only]
Hb.	— haemoglobin
H.I.	— haemagglutination inhibition
inj.	— injection(s)
insol.	— insoluble
Inst. (inst)	— Institute
i/m	— intramuscular(ly)
i/p	— intraperitoneal(ly)
i/v	— intravenous(ly)
i/d	— intradermal(ly)
lab.	— laboratory (-ories)
max.	— maximum (-al)
N.D.V.	— Newcastle disease virus
N.D.	— Newcastle disease
r.b.c.	— red blood corpuscles
r.e.s.	— reticuloendothelial system
R.H.	— relative humidity
s/c	— subcutaneous(ly)
soln.	— solution
suppl.	— supplement(s) (-ary)
std.	— standard
temp.	— temperature
therap.	— therapeutic
U.V.	— ultra-violet
vet.	— veterinary
vol.	— volume
w.b.c.	— white blood corpuscles
wt.	— weight
/	— per (*e.g.* wt./vol.; mg./lb. body wt.)

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